



*Value beyond measure*



**Products for  
Organic Analysis**



*Look for  
this symbol  
to see how  
customers think  
we measure up  
in the elemental  
analysis market.*



## **Value beyond measure**

**We offer you more than just high quality products that yield accurate results.**

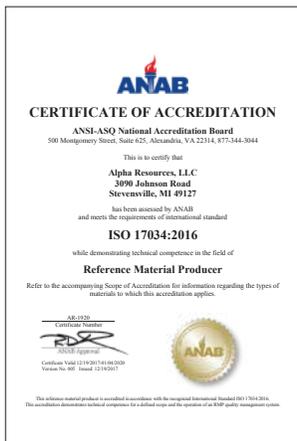
Our unmatched affordability, wide product range and friendly, expert service make Alpha Resources® your best value in the elemental analysis market.

**We're always listening for ways to serve you better.**

Need a solution? Have a suggestion? Call, chat or email us today!

Toll Free 1-800-833-3083 (USA only) • [sales@alpharesources.com](mailto:sales@alpharesources.com)

Ph. (269) 465-5559 • Fx. (269) 465-3629 • [alpharesources.com](http://alpharesources.com)



### Certified Quality

Alpha Resources® is pleased to have achieved ISO17025, 17034 and 9001. Our scope of accreditation covers the testing of our Certified Reference Materials and manufacturing processes, and verifies our commitment to excellence through our quality system.

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## Introduction

Alpha Resources® was founded in 1978 with the clear objective of providing customers in the combustion analysis industry with high quality products at fair prices, in an environment where the customer, not the supplier, takes center stage.

Since its founding, Alpha Resources® has continued to expand its product line and quality programs resulting in a broader range of high quality products for you, our customer, to achieve long term and ongoing savings. With our ever-growing product line, we can provide you with all of your routine consumable and certified reference material needs. Our quality accreditations (ISO17034, ISO17025, ISO9001) give you the needed assurances that our products will perform in your applications with consistency and predictability.

## Our History

- |   |  |
|---|--|
| <b>1978</b> Alpha Resources® was founded in Xenia, Ohio with its first product: Reference Materials for the coal industry                                       | <b>1990</b> Alpha glass and quartzware are introduced  |
| <b>1979</b> Introduced ring and pin Certified Reference Materials   | <b>1991</b> Alpha Resources® trademarks Alphasolve, our special CO <sub>2</sub> absorber with high visual color change indicator   |
| <b>1980</b> Alpha Resources® is relocated to Stevensville, Michigan in a 12,000 Sqft manufacturing facility   | <b>1992</b> Facility is expanded to 41,000 Sqft, Alpha sample containment (capsules, cups) are introduced  |
| <b>1982</b> Alpha Resources® introduced ceramic and glass products for combustion analysis  | <b>1994</b> Alpha manufactured graphite crucibles for ONH analysis are introduced  |
| <b>1985</b> Added first international dealer  | <b>1997</b> Facility is expanded to 55,000 Sqft  |
| <b>1986</b> Alpha Certified Reference Materials for the petroleum industry are introduced   | <b>2002</b> Alpha Resources® obtains ISO17025 for production of Certified Reference Materials  |
| <b>1989</b> Alpha metallographic supplies are introduced; Alpha Resources® trademarks Alphacel, our specialty blend of tungsten designed for optimal combustion | <b>2016</b> Alpha Resources® obtains ISO17034 for production of Certified Reference Materials  |
| <b>1990</b> Facility is expanded to 17,000 Sqft; Alpha Resources® trademarks Alcron, our specialty blended diamond polishing compounds for metallography        | <b>2017</b> Alpha Resources® obtains ISO9001 for the design, development and manufacture of technical ceramics, technical graphite, scientific glass, chemical reagents and other related laboratory consumables and accessories for combustion analysis |

## The Present and Future

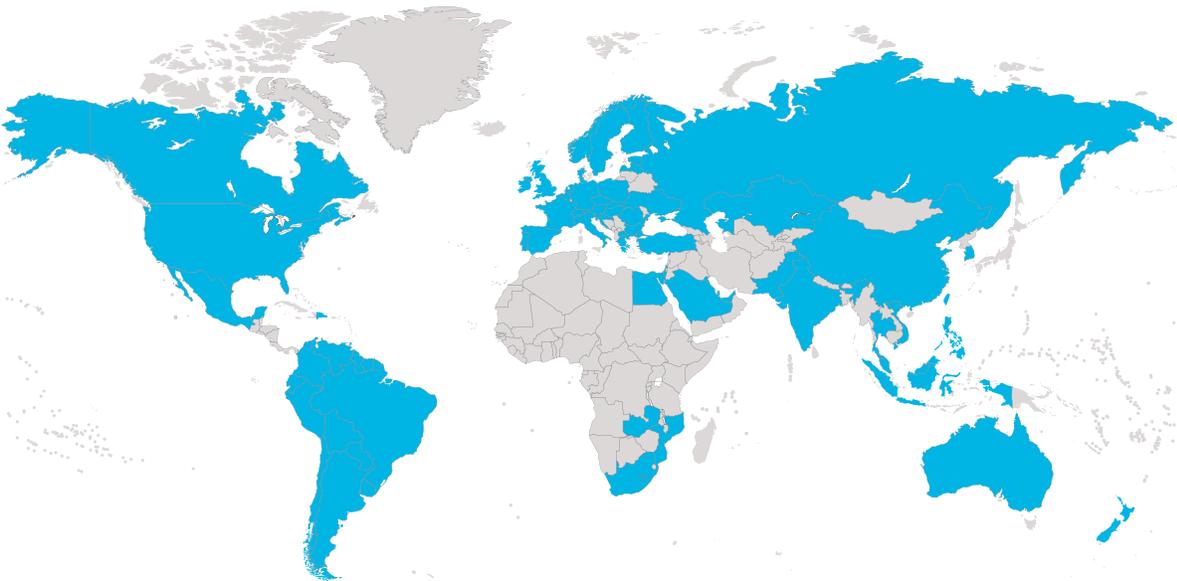
Today we manufacture the greatest mix of consumables offered by any aftermarket supplier in the marketplace. Our customers include OEMs under private label, dealers both internationally and domestically, as well as end users from small family owned laboratories to large government and global Fortune 500 companies.

Alpha Resources® will continue investing in its manufacturing capability, people and processes in the unrelenting pursuit to provide you with a growing selection of high quality products at value beyond measure. Our service team of professionals is dedicated to expediting your orders and facilitating any questions you may have along the way.

In the coming years, look for Alpha Resources® to expand its product offering further into OES, XRF, TOC, ICP, AA and related technologies.

## Global Reach

Alpha Resources® products are sold direct throughout the world and through independent dealers in over 70 different countries. In most countries we offer multiple dealers to provide you with flexibility to best meet your service needs. Our global presence is ever growing. If you are interested in becoming a dealer, please contact us at [dealersupport@alpharesources.com](mailto:dealersupport@alpharesources.com) to inquire.



# About Us



## Customer Service

Our trained and knowledgeable staff understand that the customer is always right. We have dedicated personnel that specialize in the individual requirements of all the countries in which we sell, streamlining and simplifying your ordering process. We have cross references available by email or on our website at [alpharesources.com](http://alpharesources.com) for directly cross referencing OEM part numbers to Alpha Resources® part numbers. If you need assistance in cross referencing or locating a product, our staff is always eager to provide assistance. We strive to maintain all of our commonly ordered items in stock for immediate shipment. Most orders can ship same day if received by 1 pm Eastern Standard Time.

## Shipping

Alpha Resources® can ship around the world with advantageous shipping rates due to the volume of our business. Whether you need one box or a full container, our team can ensure your order arrives safely and on time. Our orders will usually ship same day, although special orders or select items may require additional time. Please make us aware of any time deadlines when placing your orders with our staff.

## Warranty & Returns

Alpha Resources® provides 100% customer guarantee that our product will meet the performance requirements for the designated application. We accept full returns for our products (some exceptions apply for discontinued items or Reference Materials with subsequently issued lots and Certificates of Analysis).

## Private Label

Our products are manufactured under strict quality control guidelines ensuring the highest quality products. Our quality system, combined with our breadth of manufacturing capability, has resulted in Alpha Resources® supplying many OEMs under private label. If you have interest in private label, please inquire.

## Facilities

With almost 60,000 square feet of space, Alpha Resources® has dedicated manufacturing for:

- Glassware and Quartz
- Sample Containment (capsules, cups)
- Ceramics
- Graphite
- Certified Reference Materials
- Chemicals & Reagents
- Ancillary accessories and products for combustion analysis

## Commitment Statement

We offer you more than just high quality products that yield accurate results. Unmatched affordability over a wide range of products and friendly, expert service have made Alpha Resources the best value in the elemental analysis market for over 40 years. And the best is yet to come! In fact, we have recently updated our brand and improved customer resources to serve you even better.

Our goal is to provide “value beyond measure” in every customer interaction. That means being accessible when you call or chat with us online needing some advice. It’s asking for and implementing your feedback to make ordering easier and more convenient. And in so many other ways that strengthens our business relationship.

We love hearing customer success stories, how Alpha Resources helps you stay competitive and profitable year after year. And we’re always listening for new ways to help. Need a solution? Have a suggestion? Call, chat or email us today!

# How to Order

## Ordering Information

Placing orders should be easy and convenient for you. We offer four ways to place orders to fit your individual needs and preference:

- Phone: Toll Free 1-800-833-3083 (USA only) or 269-465-5559
- Fax: 269-465-3629
- Email: sales@alpharesources.com
- Online: alpharesources.com. Follow the "shop online" link in the upper right corner to register as a "new user" if you have not already created a shop online account. If you have already created a shop online account, enter your login and password for order placement 24 hours a day, 7 days a week.

When placing orders by phone or fax, please provide the following:

- Correct shipping and billing address
- Name of contact person
- Telephone and Fax number
- Part number
- Part description (helpful but not required)
- Quantity desired
- Purchase order number
- Preferred method of shipment

## Payment Terms

Alpha Resources® has no minimum purchase order requirements. Alpha Resources® Domestic terms are Net 30 with approved credit.

New customers will need to submit credit references when they place their first order to be set up on Net 30. We will also accept payment by Visa, MasterCard or American Express.

## Certificates of Analysis (COA)

COAs are available at alpharesources.com under "Support/Contact". If you need a COA that is not available on our website, please email us at sales@alpharesources.com.

## Accreditations

All certifications and accreditations are available on our website alpharesources.com under "Support/Contact".

## Shipping Method

Alpha Resources® uses a number of shippers including: Federal Express, UPS, DHL and others. We always use the shipper that achieves the lowest price possible for you and your shipping destination. We attempt to ship all regular orders within a period of 5 days from the date the order is received. If you need your order expedited, please let us know and we can help you to select the most effective shipping method to meet your time requirements and budget. Shipping method: FOB shipping point is Stevensville, Michigan (USA).



## Damaged goods

If the shipping container is damaged, refuse delivery and notify the carrier. If damage is concealed and material inside is damaged, contact Alpha Resources®.

## Returns

To return goods for any reason, you must contact Alpha Resources® to obtain a Return Merchandise Authorization (RMA) number. We are happy to accept returned goods from customers who ordered in error at no additional restocking charge. In order for the goods to be accepted by Alpha Resources®, they must be unopened, in good repair and purchased within the last 30 days. Upon our acceptance and confirmation, we will issue a credit for future purchase of our products.

## SDS

Safety Data Sheets (SDS) are available from our website for all products. To better serve our international customers, we now offer SDS software that translates into 47 different languages, and is REACH compliant.

## Disclaimer

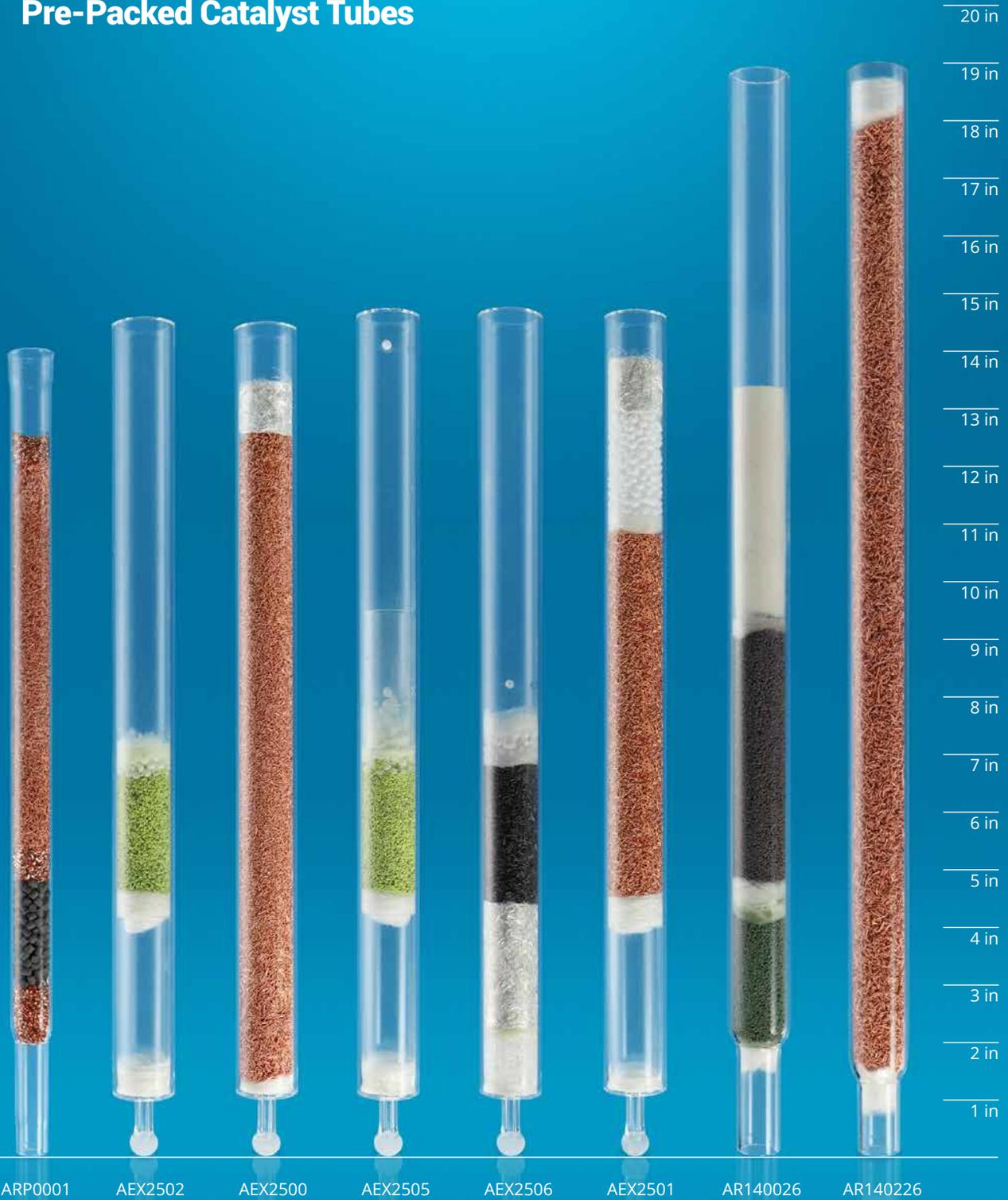
Alpha Resources® products are intended for use in a laboratory environment. They are not intended for use in the home or for other applications. It is the customer's responsibility to store, handle, properly use and dispose of all products purchased from Alpha Resources®. Our prices are subject to change without notice. Customers should contact Alpha to obtain current pricing.

# Pre-Packed Catalyst Tubes

## Save Time and Money with our line of Pre-Packed Catalyst Tubes

ALPHA	ANALYZER	TUBE	PACKING
AEX2500	Prepacked N/NC/CHN Reduction Tube Vario EL	AR11504-Reduction Tube (11.00-1150/4)	Silver Wool (AR22365) Copper Sticks (AR2304-500) Quartz Wool (AR177)
AEX2501	Prepacked CNS/CHNS Reduction Tube Vario EL	AR11504-Reduction Tube (11.00-1150/4)	Silver Wool (AR22365) Corundum Balls (AR01008) Quartz Wool (AR177) Copper Sticks (AR189)
AEX2502	Prepacked CNS/CHNS Reaction Tube Vario EL	AR11504-Reduction Tube (11.00-1150/4)	Silver Wool (AR22365) Aluminum Oxide (AR2188) Tungstic Oxide (AEB4000) Quartz Wool (AR177) Support Tube (AR1172/4)
AEX2505	Prepacked CNS/CHNS Reaction Tube MICRO cube	AR11504-Reduction Tube (11.00-1150/4)	Silver Wool (AR22365) Aluminum Oxide (AR2188) Tungstic Oxide (AEB4000) Quartz Wool (AR177) Support Tube (AR1172/4) Ash Finger (AR1170/4)
AEX2506	Prepacked N/NC/CHN Reaction Tube Vario EL3/cube/MICRO cube	AR11504-Reduction Tube (11.00-1150/4)	Silver Wool (AR22365) Aluminum Oxide (AR2188) Copper Oxide (AEB1002) Quartz Wool (AR177) Support Tube (AR1172/4)
AR140026	Velp NDA701/702 Gerhardt Dumatherm®	Combustion Tube (AR140018)	Quartz Wool (AR177) LT Catalyst (AR140014) HT Catalyst (AR140011)
AR140226	Velp NDA701/702 Gerhardt Dumatherm®	Reduction Tube (AR140018)	Quartz Wool (AR177) Copper Sticks (AR140007) Copper Oxide Wire (AEB1002)
ARP0001	LECO FP/TRU Series	Reduction Tube (AR437) or (AR9154)	Copper Sticks (AR189) Copper Turnings (AR621) N Catalyst (AR049)

# Pre-Packed Catalyst Tubes



# Sample Containment

## Ceramic, Nickel and Quartz Boats and Liners

ALPHA	DESCRIPTION	DIMS (MM)	PACK SIZE	LECO®	ELTRA®	CKIC®
AR1335	Quartz Boat	64L x 25W x 13H	EA	781-335	36210	
AR32001	Ceramic Combustion Boat	60L x 12W x 7H	250			AS3200-F-03
AR4114	Nickel Boat, Large	42L x 11W x 6H	EA	614-822-114		
AR4181	Nickel Boat, Small	42L x 8W x 5H	EA	614-822-102		
AR5282	Glazed Ceramic Boats for Liquid Samples	57L x 22W x 14H	50	528-230		
AR8053P	Ceramic Combustion Boat	92L x 12.7W x 10.5H	50	528-053	88600-0011/90161	
AR8053	Ceramic Combustion Boat	92L x 12.7W x 10.5H	500		88600-0011/90160	
AR8203	Ceramic Combustion Boat	57L x 22W x 14H	500	528-203	90153/90155	
AR8203-250	Ceramic Combustion Boat	57L x 22W x 14H	250	528-203-250	90153/90156	
AR8203P	Ceramic Combustion Boat	57L x 22W x 14H	50	529-203	90153/90157	
AR9001	Reusable Inconel Boat, Large	55L x 18W x 13.5H	EA			
AR9002	Reusable Inconel Boat, Small	55L x 18W x 9H	EA			
AR9204	Ceramic Combustion Boat	57L x 22W x 11H	500	529-204		
AR9204-250	Ceramic Combustion Boat	57L x 22W x 11H	250	529-204-250		
AR9204P	Ceramic Combustion Boat	57L x 22W x 11H	50	529-204		
AR2343	Nickel Boat Liner, Used With AR8203, AR9204		100	502-343	90250	
AR2059	Nickel Boat Liner, Used With AR1335 Quartz Boat		10	782-059		



## Tin Boats, Capsules and Foils

Tin reacts exothermically with sample materials when exposed to heat and oxygen inside your combustion chamber. It is extremely important that the tin being used is contaminant free to prevent any instability in sample analysis for CHNOS. Alpha Resources® takes great pride in providing high quality low blank tin for all the products we supply.

ALPHA	DESCRIPTION	DIMS (MM)	QTY	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AED4120	Tin Capsule Smooth Wall	14H x 6.75D	100		05 000 312			
AED4131	Tin Capsule Smooth Wall	6H x 3D	250	041062	03 951 620			
AED4132	Tin Capsule Smooth Wall	9H x 3.5D	250	041065	03 951 619			
AED5029	Tin Foil Boat	6L x 4W x 4H	1000		11.02-1047			
AR01009	Tin Foil Boat	9L x 10W x 20H	120		12.00-1009			
AR0481	Tin Capsule Smooth Wall	11.5H x 4.5D	250		05 000 481			
AR059	Tin Capsule Smooth Wall	18H x 5D	100		05 003 400		501-059	
AR10032	Tin Foil Square	36L x 36W	400		12.01-0032			
AR12014	Tin Foil Square	51L x 51W	500		12.01-0033			
AR2166	Tin Capsule Smooth Wall	18H x 6D	100		05 000 311		502-040	
AR2167	Tin Capsule Smooth Wall	22H x 8D	100		05 000 308		502-167	
AR2186	Tin Foil Cup	36L x 36W	100		05 000 429	14-0017	502-186	A00000153
AR2186-200	Tin Foil Cup	36L x 36W	200		05 000 429	14-0017	502-186-200	A00000153
AR2187	Tin Capsule Smooth Wall	8H x 3.5D	100	041065			502-187	
AR2397	Tin Foil Cup	51L x 51W	100				502-397	
AR2397-400	Tin Foil Cup	51L x 51W	400		12.01-0033		502-397-400	
AR37418	Tin Foil Boat	12L x 4W x 4H	1000		22 137 418			
AR37419	Tin Foil Boat	12L x 6W x 6H	500		22 137 419			
AR37420	Tin Foil Boat	8L x 8W x 15H	250		22 137 420			
ATD1000	Pressed Tin Capsule	4H x 3.2D	500				502-227	
ATD1001	Pressed Tin Capsule	4H x 3.2D	100					
ATD1002	Pressed Tin Capsule	5H x 3.5D	500	041074	03 951 620			
ATD1003	Pressed Tin Capsule	5H x 3.5D	100	041074				
ATD1006	Pressed Tin Capsule	6H x 4D	500					
ATD1007	Pressed Tin Capsule	6H x 4D	100	041070				
ATD1008	Pressed Tin Capsule	8H x 5D	250	041061	05 003 394			



# Sample Containment

## Tin Boats, Capsules and Foils (continued)

ALPHA	DESCRIPTION	DIMS (MM)	QTY	COSTECH®	GERHARDT®
ATD1009	Pressed Tin Capsule	8H x 5D	100	041061	
ATD1010	Pressed Tin Capsule	12H x 5D	200		
ATD1011	Pressed Tin Capsule	20H x 8D	100		
ATD4000	Tin Capsule Smooth Wall	5.5H x 2D	100	041063	
ATD4001	Tin Capsule Smooth Wall	6H x 3D	100		
ATD4020	Tin Capsule Smooth Wall	7H x 3D	100		
ATD4087	Tin Capsule Smooth Wall	9H x 6D	100		
ATD5216	Pressed Tin Capsule	10H x 10D	100	041073	14-0016



## Aluminum Boats and Capsules

Aluminum is used in place of tin at times when measuring very low levels of carbon as it has a slightly lower carbon blank value. Use caution, as it does not combust as well as tin.

ALPHA	DESCRIPTION	DIMS (MM)	QTY	ELEMENTAR®
AR00814	Aluminum Capsules Smooth Wall	7H x 3.2D	250	05 000 814
AR00815	Aluminum Capsules Smooth Wall	9H x 3.5D	250	05 000 815
AED5132	Aluminum Boats	12L x 4W x 4H	1000	03 674 012
AED5133	Aluminum Boats	12L x 6W x 6H	500	03 674 016

 *When I first heard about Alpha, OEMs had told me their product was inferior. I tried their product almost 10 years ago, and have been a customer ever since. I can't say enough about how much we've benefited from using their products.*  
 –Linda, Food Industry, Ohio

## Silver Boats, Capsules and Foils

Silver is used for oxygen analysis since no oxidation is formed during combustion. Alpha Resources® only uses the best quality silver when forming our capsules and boats.

ALPHA	DESCRIPTION	DIMS (MM)	QTY	ELEMENTAR®	COSTECH®
AR00816	Silver Capsules Smooth Wall	5.5H x 3.5D	250	05 000 816	
ASD2000	Silver Capsules Pressed	4H x 3.2D	500		
ASD2001	Silver Capsules Pressed	4H x 3.2D	100		
ASD2002	Silver Capsules Pressed	5H x 3.5D	500		
ASD2003	Silver Capsules Pressed	5H x 3.5D	100		041066
ASD2006	Silver Capsules Pressed	6H x 4D	500		
ASD2007	Silver Capsules Pressed	6H x 4D	100		
ASD2008	Silver Capsules Pressed	8H x 5D	250	05 001 540	
ASD2009	Silver Capsules Pressed	8H x 5D	100		041067
ASD2010	Silver Capsules Pressed	12H x 5D	200		
AR01371	Silver Boats	12L x 4W x 4H	500	11.00-1371	
AR33212	Silver Boats	12L x 6W x 6H	114	22 133 212	
AR33213	Silver Boats	16L x 8W x 8H	70	22 133 213	
AR33214	Silver Boats	20L x 10W x 10H	42	22 133 214	

## Gel Capsules

Gel capsules are nitrogen free and meant for dry samples. Gel capsules do not leave any residue in your ash crucible, which will save you time and money.

ALPHA	DESCRIPTION	DIA (MM)	QTY	LECO®
AR338	Gel	7	400	502-338
AR339	Gel	8	400	502-382
AR810	Gel	10	400	502-810



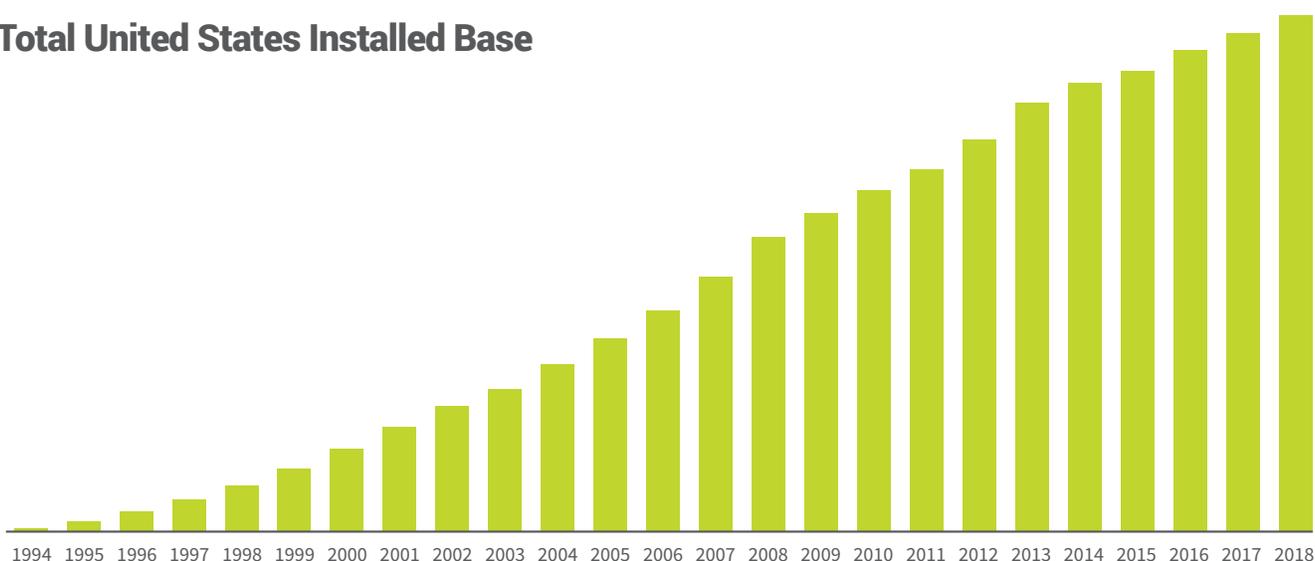


# ELTRA<sup>®</sup> Carbon, Hydrogen, and Sulfur Analyzers

## Alpha Resources<sup>®</sup> Has Been a Proud Dealer of the ELTRA<sup>®</sup> Line of Combustion Analyzers for Over 20 Years

ELTRA<sup>®</sup> is one of the world's leading manufacturers of elemental analyzers for rapid and accurate analysis of solid materials. ELTRA<sup>®</sup>'S elemental analyzers provide tailor-made solutions for a wide range of samples and concentrations. We have been offering this equipment since 1994 with thousands of satisfied customers, worldwide, that are proof of the quality and reliability of ELTRA<sup>®</sup> analyzers.

### Total United States Installed Base



**Request a Quote or Additional Technical Information**  
email: [sales@alpharesources.com](mailto:sales@alpharesources.com) or call: 800-833-3083

## ELTRA® CS-2000 Carbon and Sulfur in Metals and Organics

ELTRA®'s CS-2000 is the only analyzer on the market for the determination of carbon and sulfur in organic as well as inorganic samples. For this purpose, the CS-2000 is equipped with both an induction and a resistance furnace (ELTRA Dual Furnace Technology), covering the full range of carbon and sulfur analysis.

The CS-2000 is available with up to four independent infrared cells, which allow the precise and simultaneous analysis of high and low carbon and/or sulfur concentrations. The sensitivity of the cells can be customized individually by selecting the length of the IR-paths to ensure the optimum measuring range for each application.



### Application Examples

alloys, ashes, carbides, cast iron, cement, ceramics, coal, coke, copper, glass, gypsum, iron, limestone, metals, minerals, oil, ores, plant materials, refractory metals, rubber, sand, soils, steel, titanium, tobacco

### Product Advantages

- Full flexibility due to combined induction and resistance furnace: ELTRA Dual Furnace (EDF) Technology
- Analysis of organic and inorganic samples
- Due to ELTRA Dual Furnace (EDF) Technology: fractional analysis of carbon and sulfur
- Up to four independent infrared cells with flexible measuring ranges
- Due to gold IR path, increased cell life time for analysis of halogen or acid containing samples
- Automatic induction furnace cleaning
- Wide range of materials (organic and inorganic) can be analyzed
- Rapid, precise, accurate and reliable element determination
- Powerful (2.2 kW) induction furnace for temperatures above 2,000 °C
- Temperature of resistance furnace adjustable up to 1,550 °C in steps of 1 °C
- Effective, easily accessible dust trap
- Single and multipoint calibration
- Simultaneous calibration of carbon and sulfur
- Low maintenance
- Robust design allows usage in production control and laboratory simultaneous carbon and sulfur determination with minimal sample preparation

# ELTRA® Carbon, Hydrogen, and Sulfur Analyzers

## ELTRA® CHS-580 Carbon, Hydrogen and Sulfur Analyzer

ELTRA®'s CHS-580 is the ideal analyzer for the simultaneous determination of carbon, hydrogen and sulfur in organic samples.

Thanks to sample weights of 500 mg and more, even inhomogeneous materials can be reliably analyzed. The temperature of the powerful horizontal resistance furnace with ceramic tube can be set in steps of 1 °C to a maximum of 1,550 °C.

The analyzer can be equipped with up to three independent infrared cells according to the user's requirements, allowing for a great variety of applications.

### Application Examples

coal, coke, oil, plant materials, rubber, soot, tobacco, waste

### Product Advantages

- simultaneous carbon, sulfur and hydrogen determination with minimal sample preparation
- wide range of organic materials can be analyzed
- rapid, precise, accurate and reliable element determination
- resistance furnace can be set up to 1550 °C in steps of 1 °C
- customized infrared cells provide wide, dynamic measuring range
- due to gold IR path, increased cell life time for analysis of halogen or acid containing samples
- powerful software (multilingual, customized display, export of results)
- single and multipoint calibration
- low maintenance
- robust design allows usage in production control and laboratory

ELTRA® CHS-580



**Request a Quote or Additional Technical Information**  
email: [sales@alpharesources.com](mailto:sales@alpharesources.com) or call: 800-833-3083

## ELTRA® CHS-580A Carbon, Hydrogen and Sulfur Analyzer, Vertical Furnace with Autoloader

ELTRA®'s CHS-580 is the ideal analyzer for the simultaneous determination of carbon, hydrogen and sulfur in organic samples.

Thanks to sample weights of 500 mg and more, even inhomogeneous materials can be reliably analyzed. The temperature of the powerful vertical resistance furnace with ceramic tube can be set in steps of 1 °C to a maximum of 1,550 °C.

The analyzer can be equipped with up to three independent infrared cells according to the user's requirements, allowing for a great variety of applications.

### Application Examples

coal, coke, oil, plant materials, rubber, soot, tobacco, waste

### Product Advantages

- simultaneous carbon, sulfur and hydrogen determination with minimal sample preparation
- wide range of organic materials can be analyzed
- rapid, precise, accurate and reliable element determination
- resistance furnace can be set up to 1550 °C in steps of 1 °C
- customized infrared cells provide wide, dynamic measuring range
- due to gold IR path, increased cell life time for analysis of halogen or acid containing samples
- powerful software (multilingual, customized display, export of results)
- single and multipoint calibration
- low maintenance
- robust design allows usage in production control and laboratory

ELTRA® CHS-580A





# Nitrogen and Food Protein Analyzers

## The Dumas Method

The Dumas Method is used for the quantitative determination of nitrogen in chemical substances based on a technique first described by Jean-Baptiste Dumas, a French chemist. He introduced the combustion method for nitrogen analysis in 1831, but the original method was not accepted for routine analyses due to various difficulties (inaccurate results, lack of availability of the special gases and catalysts required for the analysis).

Since 1831 the original combustion method has been modified and automated to improve the technique. An automated instrumental technique has been developed which is capable of rapidly measuring the total protein concentration of food samples. This method is an alternative method to the Kjeldahl method as the standard method to determine the protein content of food samples as well as other types of samples.

LECO®, Elementar®, CKIC®, Velp®, Costech® and Gerhardt® all employ their own version of this proven method.

## Combustion, Catalyst and Reagent Tubes

Dumatherm® by Gerhardt/Velp NDA/Costech

ALPHA	DESCRIPTION	COSTECH®	GERHARDT®	VELP®
AEC1008	Threaded Scrubber Tube	71120	14-0061	
AR140018	Combustion/Reduction Tube	61128	140018/14-0203	A00000162



*\*Images not shown at actual size*



## Ash Inserts and Crucibles

ALPHA	DESCRIPTION	MATERIAL	QTY	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AEC1131	Ash Insert, Slotted	Quartz	EA	061130		7725		A00000161
AEC3031	Ash Crucible	Stainless	EA		12.00-1087/4			
AEC3054	Ash Crucible, Slotted	Quartz	EA		38.00-1290			
AEC3061	Ash Crucible HT for Pyrolysis	Graphite	EA		23.00-1189			
AEC3062	Ash Crucible	Stainless	EA		11.45-1005/4			
AEC3065	Ash Crucible	Stainless	EA		16.00-1104			
AR00087	Ash Finger	Ceramic	EA		05 000 087			
AR026	Ash Crucible	Ceramic	50				529-026/529-055	
AR1170/4	Ash Finger 60 mm Slotted	Quartz	EA		11.00-1170/4			
AR4961	Large Ash Crucible for Solids	Ceramic	10				614-961	
AR5000	Ash Insert	Ceramic	10	061128		14-0015		A00000198
AR7605	Large Ash Crucible for Liquids	Ceramic	10				617-605	



# Nitrogen and Food Protein Analyzers

## LECO® Compatible Combustion Tubes and Supplies

FP Series, TruMac® Series

ALPHA	DESCRIPTION	LECO®
AR437	Quartz Reduction Tube	601-437
AR6108	Combustion Tube (U Tube)	616-108
AR7548	Reagent Tube	617-548, 633-103-225
AR9065	Combustion Tube (U Tube)	619-065
AR9154	Quartz Reduction Tube	619-154
AR9268	Reagent Tube	619-268
AR9455	Reagent Tube	619-455
AR03353	Incoming Scrubber Tube	625-603-353

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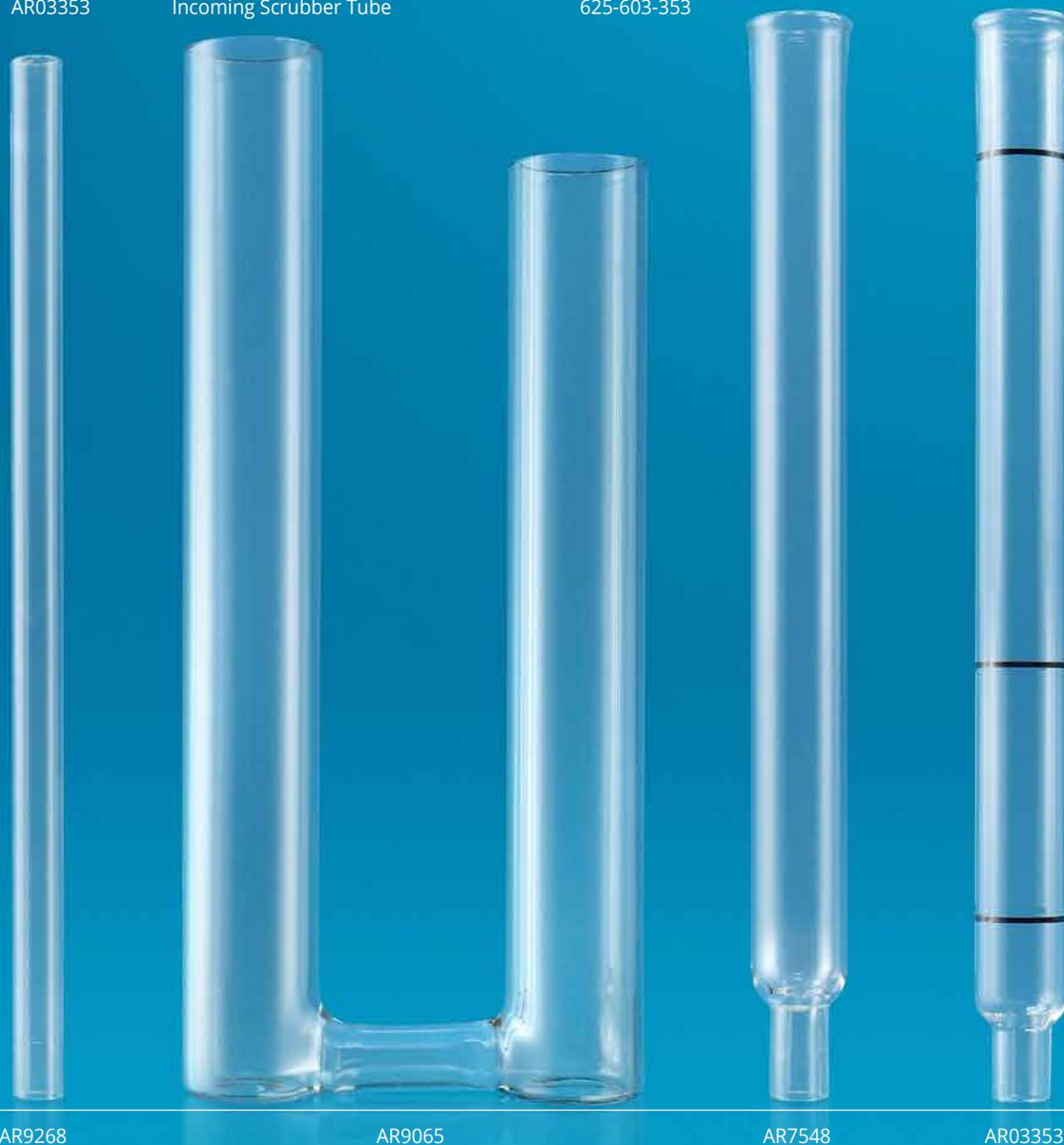
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AR9268

AR9065

AR7548

AR03353



AR9455

AR6108

AR437

AR9154

# Nitrogen and Food Protein Analyzers

## LECO® Compatible Glass Combustion Tubes and Supplies

FP Series, TruMac® Series

ALPHA	DESCRIPTION	LECO®
AR390	Reagent Tube	601-390
AR438	Combustion Tube with Sidearm	601-438
AR441	Quartz Lance Tube	601-441
AR601	Reagent Tube	775-601
AR6146	Quartz Lance Tube	616-146
AR6327	Reagent Tube	606-327, 625-602-539
AR9116	Combustion Tube with Sidearm	609-116
AR9316	Filter Tube	619-316
AR03030	Reduction Tube	625-603-030

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AR9316

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AR6327



AR9116



AR438



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# Nitrogen and Food Protein Analyzers

16 in

## Elementar® Compatible Combustion Tubes and Supplies

Rapid N Series

15 in

ALPHA	DESCRIPTION	ELEMENTAR®
AEC1143	Glass Tube	15.00-0080
AEC3008	Drying Tube	22 160 204/4
AR1172/4	Support Tube	11.00-1172/4
AEC1317/4	Protective Tube	11.00-1317/4
AEC3026	Drying Tube, L=348 mm	16.00-1012
AEC3045	Filter Tube	50 009 375/4
AEC3047	Glass Tube, L=150 mm	16.00-1037
AEC3055	Combustion Tube, Steel	29.00-1030
AEC3066	Drying Tube, Straight	22 160 204/4
AEC3067	Combustion Tube	29.00-1078
AEC3069	Combustion Tube	16.02-0036
AR01007	Reduction Tube for Filling with Tungsten	25.00-0017
AR01021	Protective Ceramic Tube	23.00-1021
AR01048	Post Combustion Tube	25.00-1048
AR10364	Combustion and Post Combustion Tube	12.01-1036/4
AR11504	Combustion Tube/Reduction Tube	11.00-1150/4
AR11714	Support Tube, L=133 mm	11.00-1171/4
AR13084	Reduction Tube	11.00-1308/4

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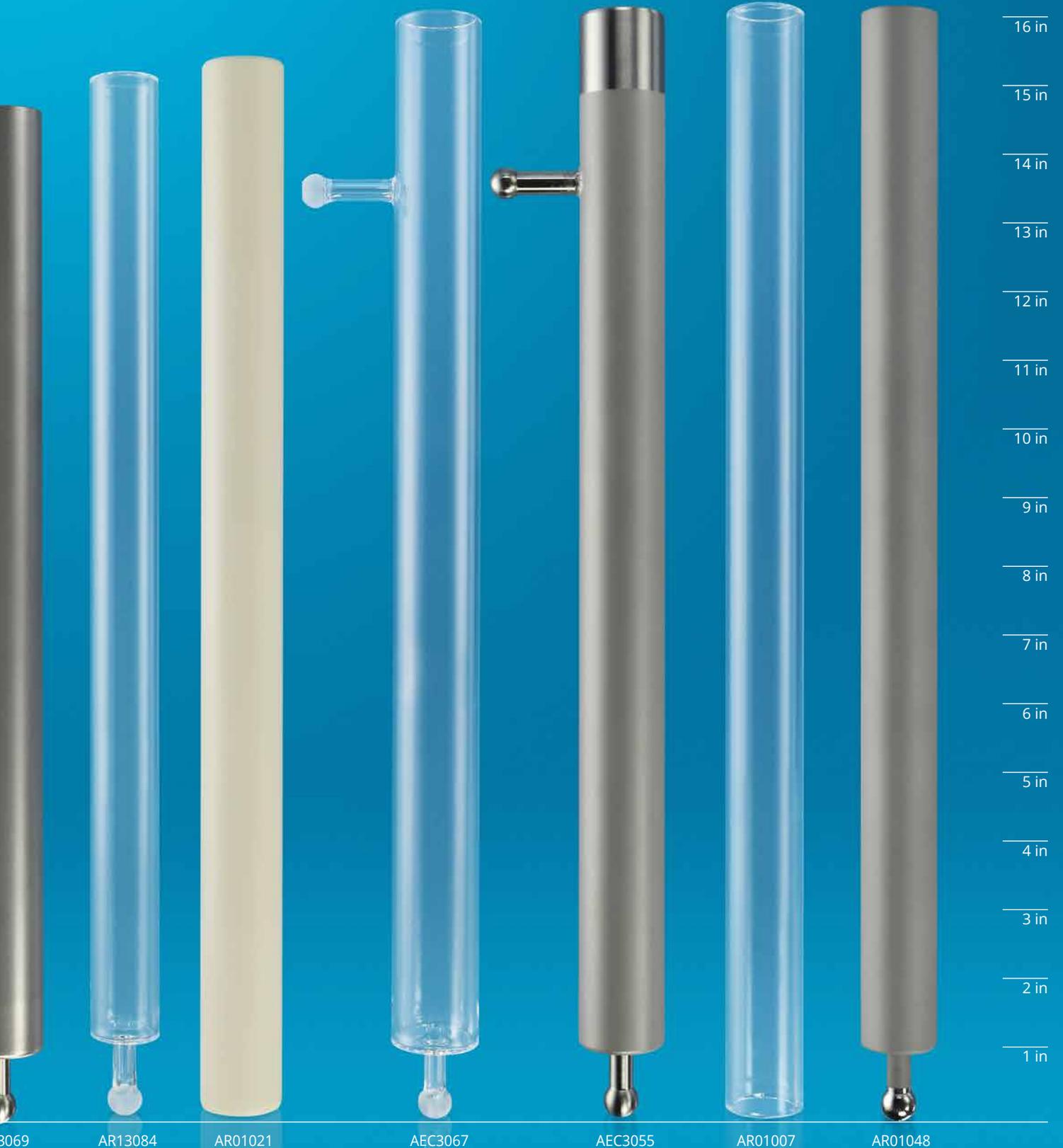
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AEC3045 AR1172/4 AEC3008 AEC3066 AR11714 AEC3047 AEC1143 AR11504 AEC3026 AR10364 AEC3055



3069

AR13084

AR01021

AEC3067

AEC3055

AR01007

AR01048

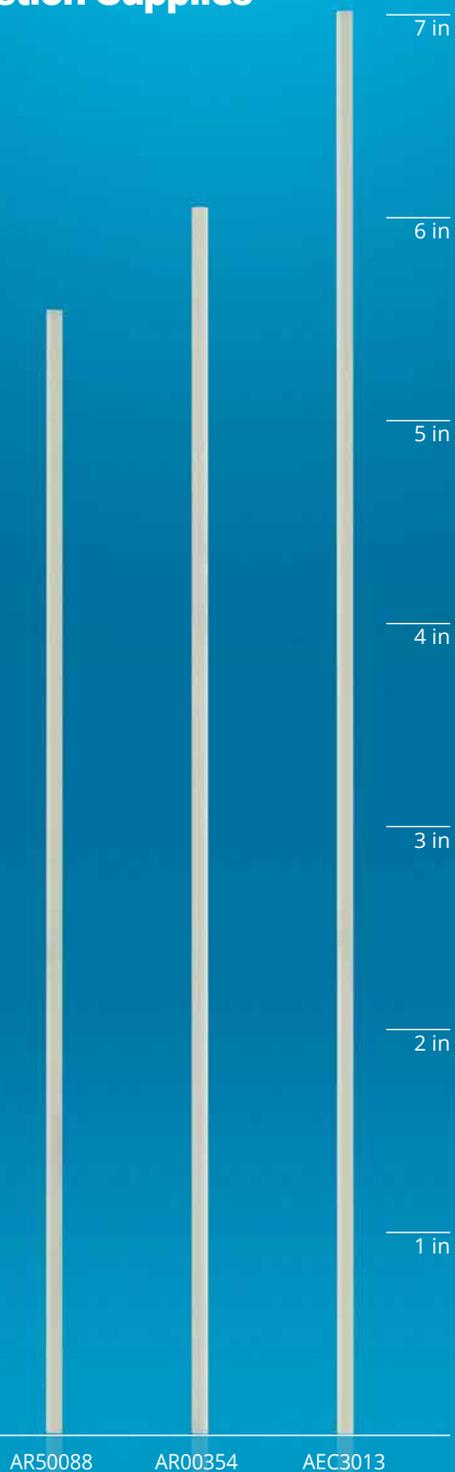
# Nitrogen and Food Protein Analyzers

## Elementar® Compatible Ceramic Combustion Supplies

ALPHA	DESCRIPTION	ELEMENTAR®
AEC3013	Lance 170 mm	05 000 658
AR00354	Lance 150 mm	05 000 354
AR13314	Quartz Bridge	11.00-1331/4
AR50088	Lance 140 mm	05 000 088



*For pricing and additional information,  
visit [alpharesources.com](http://alpharesources.com),  
email [sales@alpharesources.com](mailto:sales@alpharesources.com)  
or call 800-833-3083.  
We're always waiting to serve you better.*



## LECO® TruMac® and 928 Series Compatible Combustion Tube and Supplies

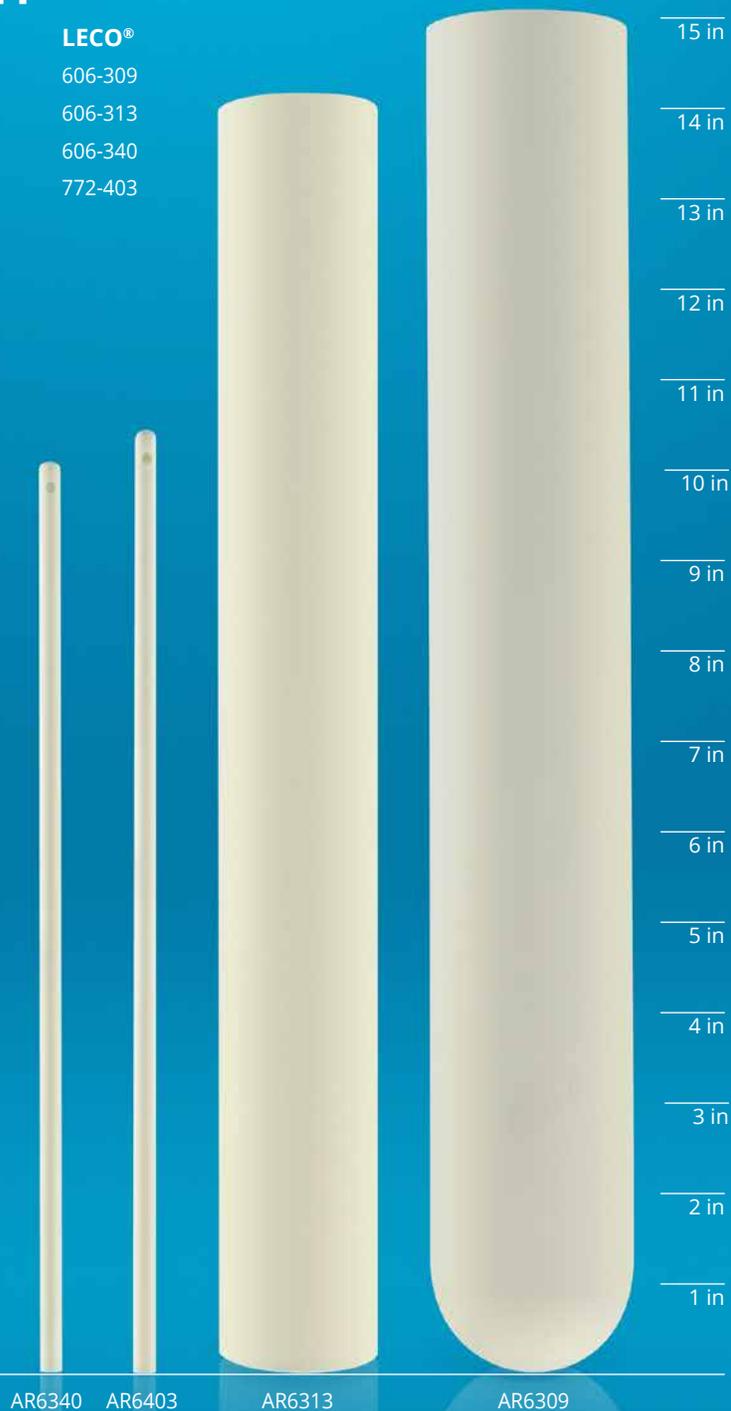
ALPHA	DESCRIPTION	LECO®
AR1476	O-ring for Inner Combustion Tube	611-476
AR1477	O-ring for AR1554 Combustion Tube	611-477
AR1554	Outer Combustion Tube	625-601-554
AR1555	Inner Combustion Tube	625-601-555
AR520	O-ring for AR602 Lance	772-520
AR602	Lance	625-602-187
AR6308	Boat Stop	606-308



# Nitrogen and Food Protein Analyzers

## LECO® FP2000 Series Compatible Combustion Tube and Supplies

ALPHA	DESCRIPTION	LECO®
AR6309	Outer Combustion Tube	606-309
AR6313	Inner Combustion Tube	606-313
AR6340	Lance	606-340
AR6403	Lance	772-403



## LECO® Compatible Heating Elements and Supplies

ALPHA	DESCRIPTION	UNIT	LECO®
AR25068	Heating Element Clamps	TruMac®	625-068
AR460	Thermocouple		774-460
AR5067	Heating Elements (6 pcs)	TruMac®	625-067
AR563	Short Braided Cables with Terminal Connection	FP2000	613-563
AR6224	Thermocouple		606-224
AR6319	Braided Cable	FP2000	606-319
AR6320	Heating Element Clamps	FP2000	606-320
AR6601	Heating Elements (4 pcs)	FP2000	606-601
AR7073	Thermocouple		722-522/772-522/777-073
AR9566	Braided Cable	TruMac®	633-101-362/633-101-363



## Reagents, Catalysts and Chemicals

ALPHA	DESCRIPTION	SIZE	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AEB1002	Copper Oxide Wires	100 g	011002	05 001 070	14-0027/7730	502-190	A00000157
AEB1008	Quartz Chips	100 g		03 679 907			
AEB1304	Brass Wool	50 g		38.00-0124			
AEB1406	Zinc Powder	50 g		29.00-0092			
AR00086	Aluminum Oxide Wool	20 g		05 000 086			
AR00469	Cerium (IV) Oxide, Granular	30 ml		05 000 469			
AR00900	Quartz Chips	50 g		05 000 900			
AR01008	Corundum Balls	50 g		50 008 467			
AR01715	Cotton Wool	50 g		05 001 715			
AR02530	Tungsten, Granulated	500 g		12.00-0040			
AR02530X	Tungsten Kit, Complete, Premium (Granulate + Spacer)			12.01-0045			
AR049	N-Catalyst	50 g		03 002 262		502-049	
AR081	Glass Wool	454 g				501-081	
AR140011	HT Catalyst	100 g	011053		14-0011		A00000159
AR140014	LT Catalyst	50 g	011052		14-0014		A00000160



# Nitrogen and Food Protein Analyzers

## Reagents, Catalysts and Chemicals (continued)

ALPHA	DESCRIPTION	SIZE	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AR171	AlphaDri Magnesium Perchlorate	454 g	021022	03 679 901	7713/14-0219	501-171-HAZ	A00000225
AR177	Quartz Wool	50 g	021026/0212035	03 679 908	14-0012	502-177/502-314	A00000154
AR20017	Tungsten (Vi)-Oxide Powder, Sample Additive	25 g		11.02-0017			
AR20024	Tungsten (Vi)-Oxide Powder, Sample Additive	90 g		11.02-0024			
AR2174	AlphaSolve II 20-30 Mesh	500 g		03 679 900		502-174-HAZ	
AR2176	AlphaSolve II 8-20 Mesh	500 g				502-176-HAZ	
AR2181	Tungsten (Vi)-Oxide for Filling Combustion Tube	60 g		11.02-0008		502-181	
AR2188	Aluminum Oxide Pellets	200 g				502-188	
AR22365	Silver Wool	50 g		22 131 365			
AR2310	Steel Wool	454 g				502-310	
AR2359	Magnesium Oxide	200 cc				502-359	
AR265	Glass Wool	227 g				763-265	
AR426	Combustion Control for Solids	454 g	21028		14-0022	501-426	A00000148
AR427	Combustion Control for Liquids	454 g				501-427	
AR615	Furnace Reagent	100 g				501-609	
AR8379	Quartz Wool Strips	10 pcs				608-379	



## Copper Sticks, Oxides and Wires

ALPHA	DESCRIPTION	SIZE	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AR140007	Copper Sticks-Velp/Dumatherm	450 g		05 000 699	14-0007		A00000240
AR140246	High Usage Copper Sticks	450 g		05 000 699	14-0246		A00000240
AR189	Copper Sticks-Ampoule	100 g		05 000 699		502-189	
AR2304	Copper Sticks-Resealable	100 g	011012/ 011014	05 000 699		502-304	
AR2304-500	Copper Sticks-Resealable	500 g		05 000 699		502-304-500	
AR621	Copper Turnings					501-621	
AEB1002	Copper Oxide Wire	100 g	011003	05 001 070	14-0027	502-190	A00000157
AR01029	Copper Oxide Wire	250 g		03 679 905			
AR01039	Copper Oxide Wire-Fine	250 g		05 001 039			



## O-rings and Gaskets

Dumatherm by Gerhardt/Velp NDA/Costech

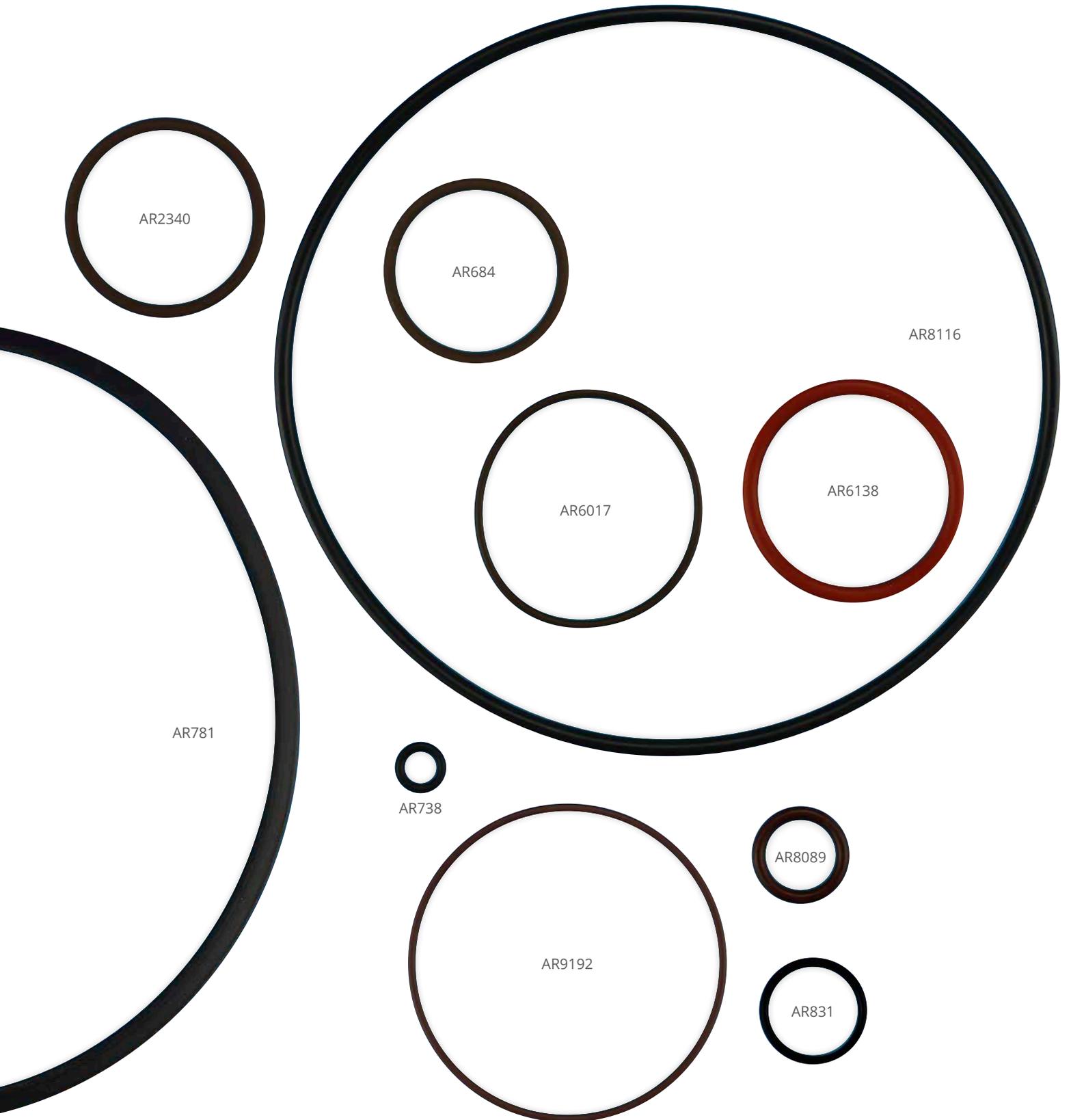
ALPHA	DESCRIPTION	COSTECH®	GERHARDT®	VELP®
AR140019	Lower Combustion Tube O-ring	061140	14-0019	10005506
AR140020	Upper Combustion Tube O-ring	061106	14-0020	10003529



Alpha's customer service is excellent! I can always talk with their sales staff if I have any questions.

-Greg, Petroleum Industry, Texas



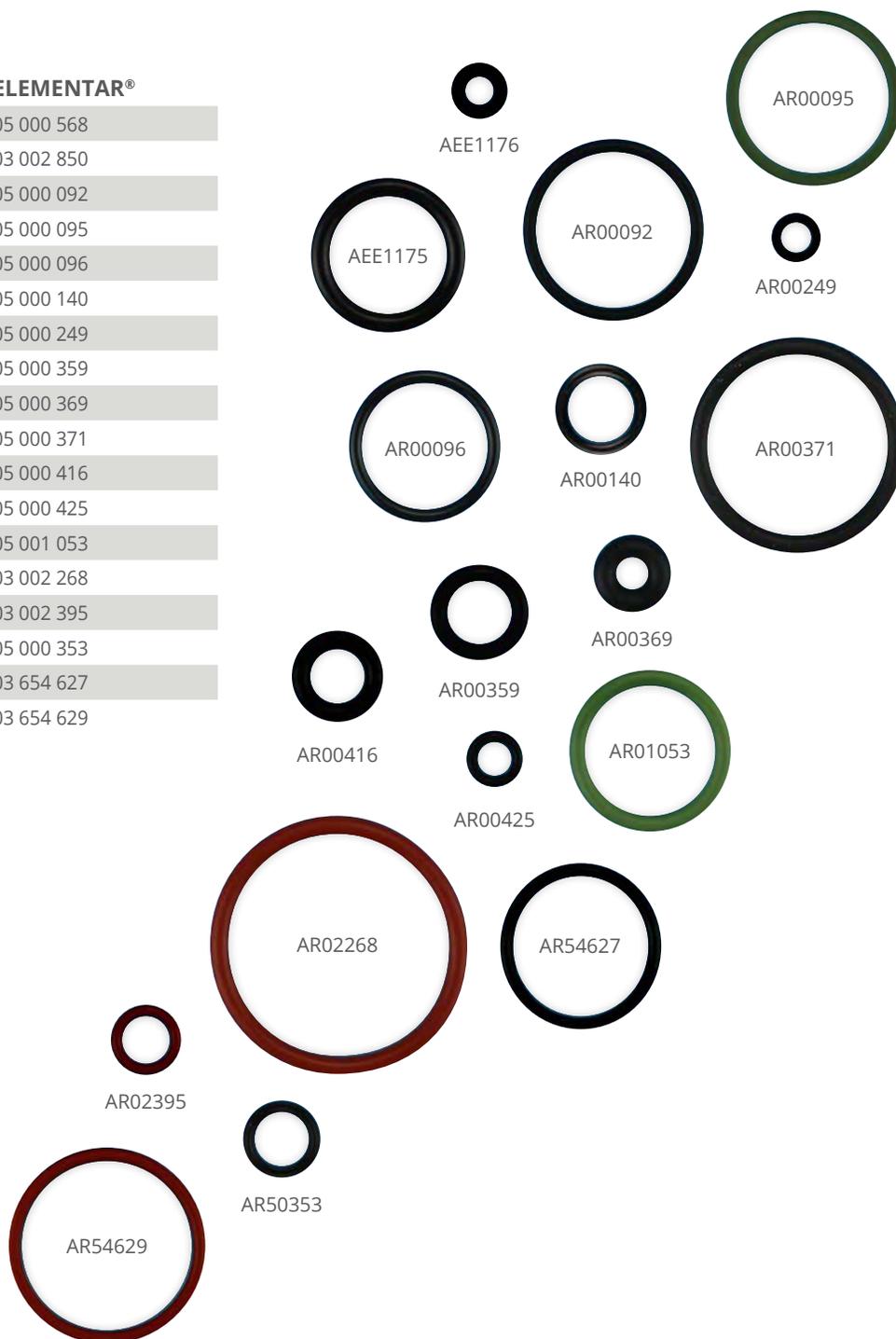


# Nitrogen and Food Protein Analyzers

## Elementar® Compatible O-rings and Gaskets

### Rapid N Series

ALPHA	DESCRIPTION	ELEMENTAR®
AEE1175	O-ring	05 000 568
AEE1176	O-ring	03 002 850
AR00092	O-ring	05 000 092
AR00095	O-ring	05 000 095
AR00096	O-ring	05 000 096
AR00140	O-ring	05 000 140
AR00249	O-ring	05 000 249
AR00359	O-ring	05 000 359
AR00369	O-ring	05 000 369
AR00371	O-ring	05 000 371
AR00416	O-ring	05 000 416
AR00425	O-ring	05 000 425
AR01053	O-ring	05 001 053
AR02268	O-ring	03 002 268
AR02395	O-ring	03 002 395
AR50353	O-ring	05 000 353
AR54627	O-ring	03 654 627
AR54629	O-ring	03 654 629



## Useful Operating Supplies and Accessories for LECO® and Elementar®

ALPHA	DESCRIPTION	LECO®	ELEMENTAR®
AEE2505	Gloves		05 000 094
AR02530S	Spacers for Tungsten		12.01-1008/4
AR061	Boat Puller	501-062	
AR1207	Pull Shaft with Finger Arm	611-207	
AR138	Self Closing Tweezer, 6.5"	760-138	
AR1614	Spatula	501-614	
AR1617	Tweezers, 5"		
AR1618	Curved Point Tweezers, 4.5"		03 001 248
AR2189	Tube Cleaner	502-007	
AR241	Vacuum Grease	501-241	03 968 066
AR473	Funnel for Quick Disconnect Tube	502-023	
AR5306	Secondary Filter	775-306	
AR1621	Curved Self Closing Tweezer, 6.5"		
AR6504	Particle Filter	616-504	
AR899	Honeycomb Support	780-899	
AR901	Glass Scoop	503-032	
AR9271	Radial Shaft Seal	609-271	
AR929	Tongs	761-929	
AR936	Large Glass Scoop	762-936	
AR9474	Finger Arm	609-474	
AR9728	Metal Shaft Bearing	609-728	
AR981	Wire Brush	601-981	



\*Images not shown at actual size



# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

## Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

CHNOS elemental analyzers provide a means for the rapid determination of carbon, hydrogen, nitrogen, oxygen and sulfur in organic matrices and other types of materials. They are capable of handling a wide variety of sample types, including solids, liquids, volatile and viscous samples, in the fields of pharmaceuticals, polymers, chemicals, environment, food and energy.

Basic principles in the combustion process, carbon is converted to carbon dioxide; hydrogen to water; nitrogen to nitrogen gas/oxides of nitrogen and sulfur to sulfur dioxide. Many different absorbents are used to remove these additional combustion products as well as some of the principal elements. The combustion products are passed out of the combustion chamber by an inert carrier gas such as helium and passed over heated high purity copper. The function of this copper is to remove any oxygen not consumed in the initial combustion and to convert any oxides of nitrogen to nitrogen gas. The gases are then passed through the absorbent traps in order to leave only carbon dioxide, water, nitrogen and sulfur dioxide. Detection of the gases can be carried out in a variety of ways, including thermal conductivity detection and a series of separate infrared cells for detection of individual compounds.

 *I love ordering from Alpha. Their sales team is incredibly friendly and professional. I was really impressed with their extensive product offering, and I can find pretty much everything I need at a huge savings! –Sebastian, International Testing Lab*

## LECO® TruMac® and 928 CHN Series Compatible Combustion Tubes and Supplies

ALPHA	DESCRIPTION	LECO®
AR1476	O-ring for Inner Combustion Tube	611-476
AR1477	O-ring for Outer Combustion Tube	611-477
AR1554	Outer Combustion Tube	625-601-554
AR1555	Inner Combustion Tube	625-601-555
AR520	O-ring for Lance	772-520
AR602	Lance	625-602-187
AR6308	Boat Stop	606-308
AR6403	Lance	772-403



## LECO® CNS2000 Series Compatible Combustion Tubes and Supplies

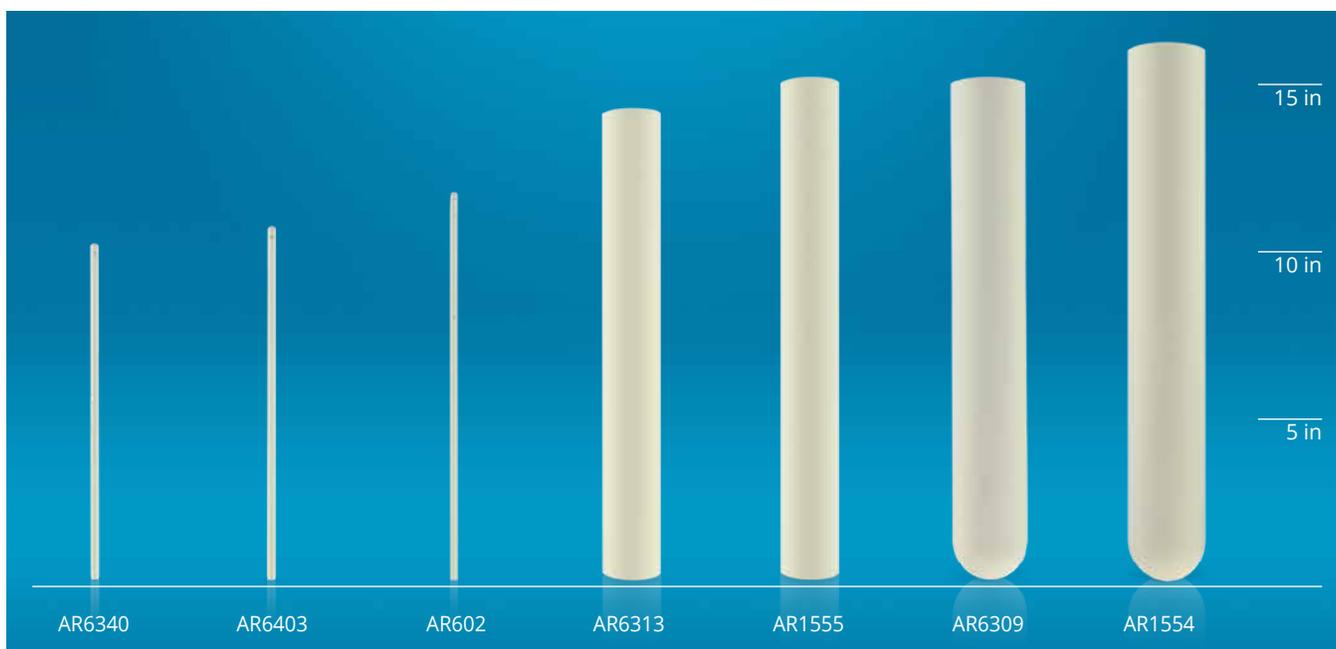
ALPHA	DESCRIPTION	LECO®
AR1476	O-ring for Inner Combustion Tube	611-476
AR1477	O-ring for Outer Combustion Tube	611-477
AR520	O-ring for Outer Lances	772-520
AR6308	Boat Stop	606-308
AR6309	Outer Combustion Tube	606-309
AR6313	Inner Combustion Tube	606-313
AR6340	Lance	606-340
AR6403	Lance	772-403



AR520



AR6308



# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

## LECO® Compatible Combustion, Catalyst and Reagent Tubes

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### ALPHA

### DESCRIPTION

### LECO®

AR1026	Reagent Tube	622-001-026
AR390	Filter Tube	601-390
AR601	Reagent Tube	775-601
AR6146	Lance Tube	616-146
AR6327	Reagent Tube	606-327, 625-602-539
AR7548	Filter Tube	617-548, 633-103-225
AR9065	Combustion Tube	619-065
AR9154	Filter Tube	619-154
AR9268	Reagent Tube	619-268
AR9316	Reagent Tube	619-316
AR9455	Filter Tube	619-455
AR03030	Reduction Tube	625-603-030
AR03353	Incoming Scrubber Tube	625-603-353



AR6146

AR1026

AR601

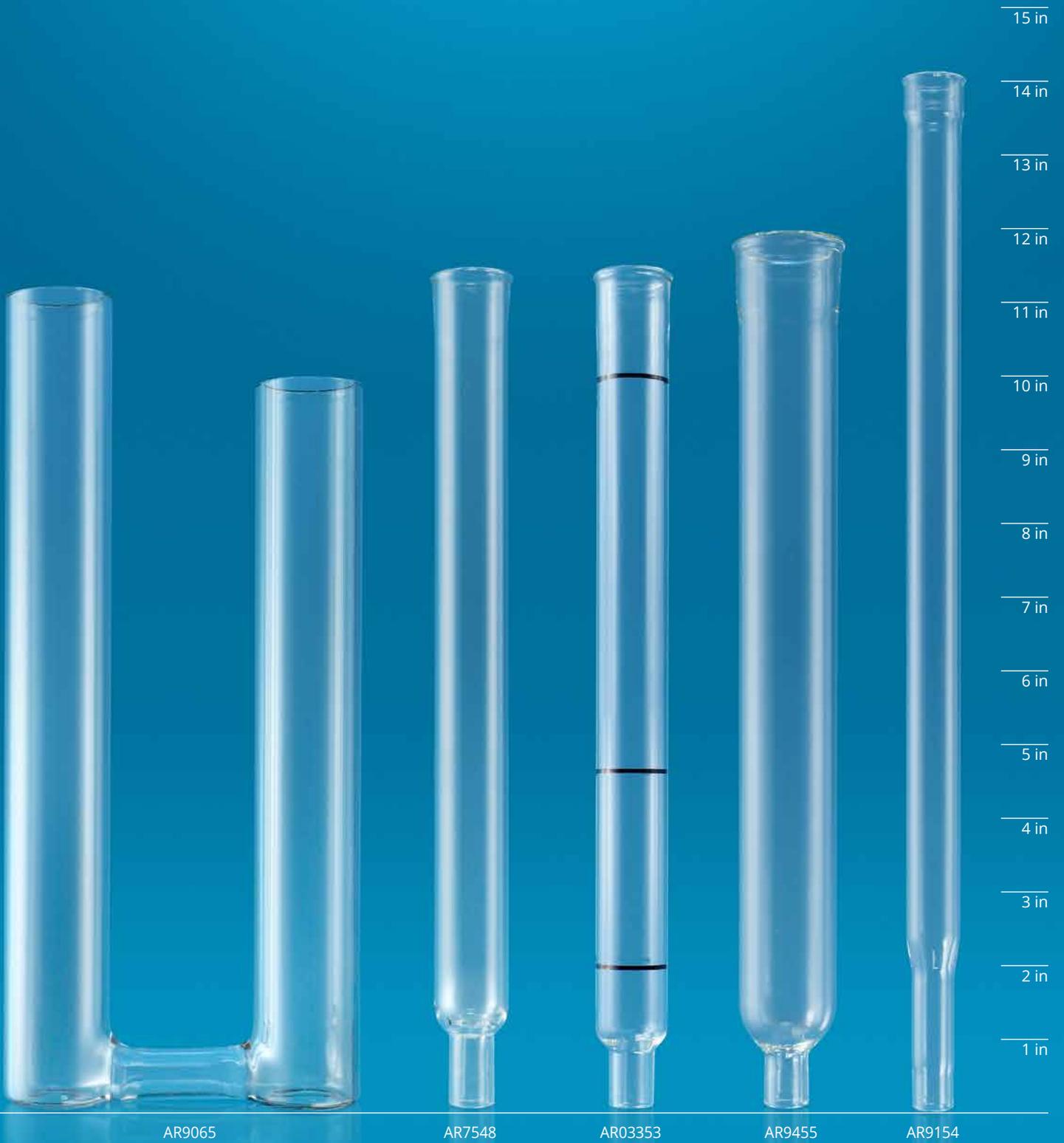
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AR390

AR6327

AR9268

AR03030



AR9065

AR7548

AR03353

AR9455

AR9154

# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

## Elementar® Compatible Combustion, Catalyst and Reagent Tubes

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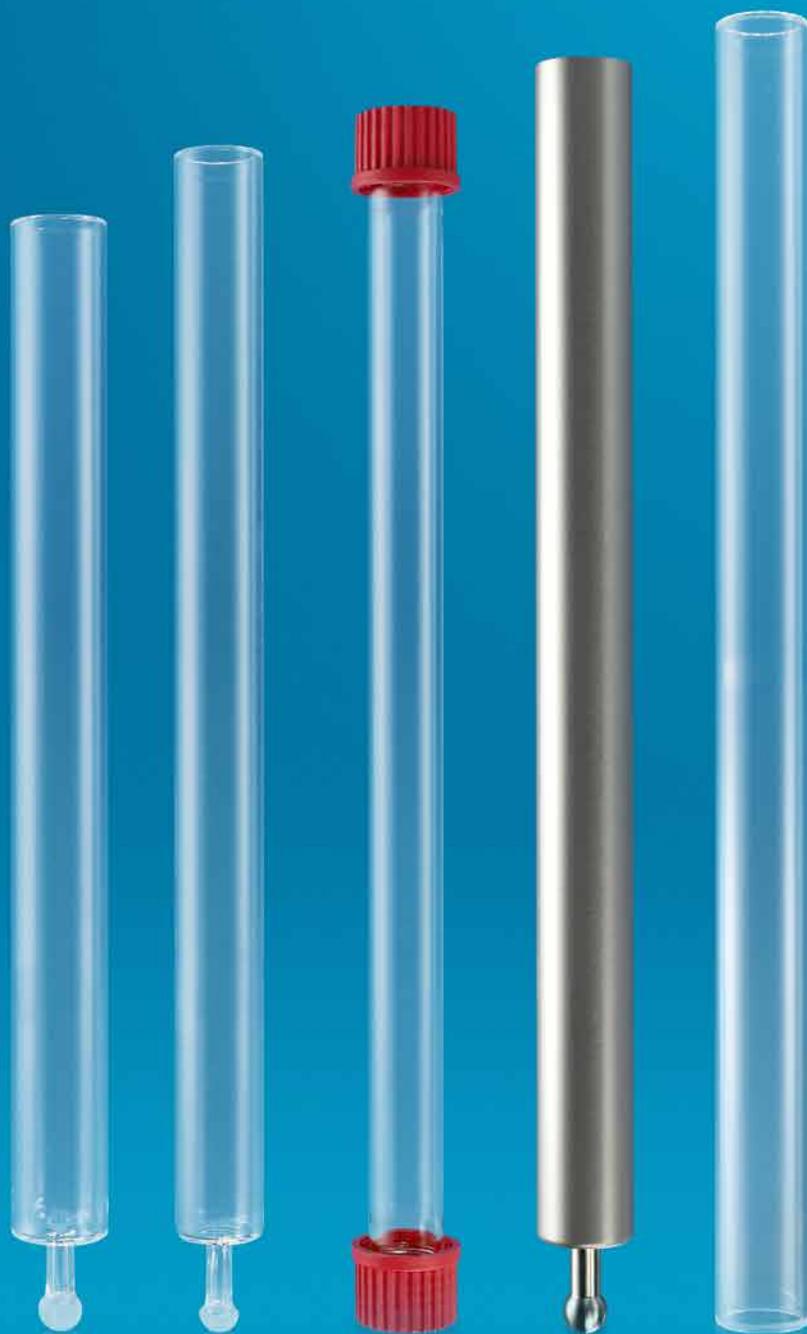
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ALPHA	DESCRIPTION	ELEMENTAR®
AEC3026	Drying Tube	16.00-1012
AEC3049	Protection Tube	11.00-1317/4
AR01007	Combustion Tube	25.00-0017
AR01028	Combustion Tube	25.00-1028
AR01030	Combustion Tube	25.00-1030
AR01040	Post Combustion Tube	03 002 849
AR01048	Post Combustion Tube	25.00-1048
AR01149	Reaction Tube	23.00-1149
AR02510	Quartz Catalyst Tube	12.01-1013/4
AR10364	Combustion Tube	12.01-1036/4
AR11504	Combustion Tube	11.00-1150/4
AR2253/4	Reduction Tube	03 002 253/4



AR01149

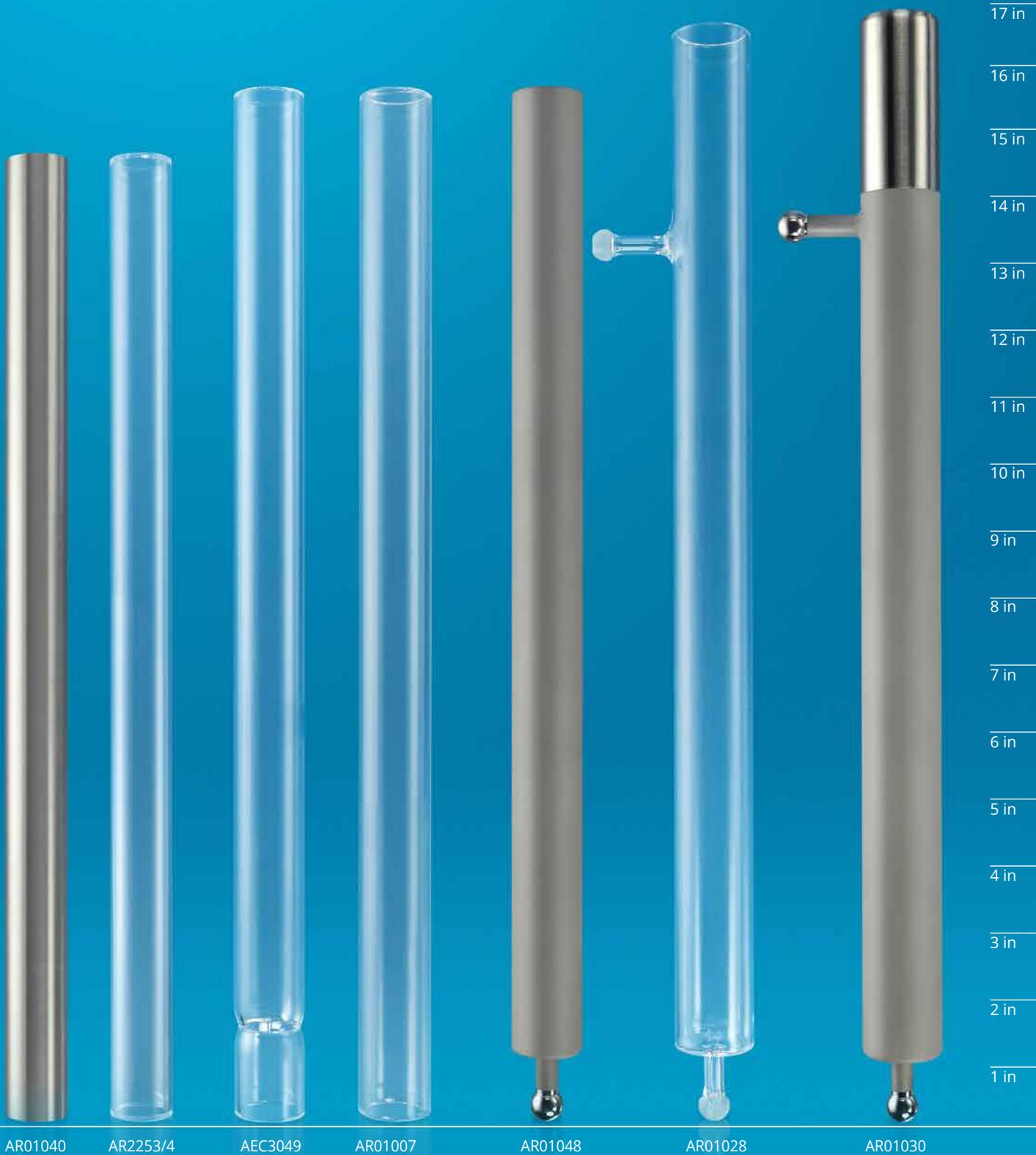
AR11504

AEC3026

AR10364

AR02510

# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers



AR01040

AR2253/4

AEC3049

AR01007

AR01048

AR01028

AR01030

# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

## Elementar® Compatible Combustion, Catalyst and Reagent Tubes

17 in

ALPHA#	DESCRIPTION	ELEMENTAR®
AEC3004	Combustion Tube	22 156 202/3
AR13084	Reduction Tube	11.00-1308/4
AEC3020	Pyrolysis Insert Tube	22 133 211/4
AR1317/4	Protection Tube	11.00-1317/4
AEC3022	Connection Tube	11.00-1331/4
AEC3045	Filter Tube	50 009 375/4
AEC3047	Drying Tube Short	16.00-1037
AEC3052	Support Rod	23.00-1148
AEC3056	Combustion Tube	11.22-0003/3
AR00354	Lance 150mm	05 000 354
AR01003	Connection Tube	25.20-1003
AR01020	Combustion Tube	12.00-1006/4
AR01032	U Tube	22 160 301/4
AR01150	Combustion Tube	23.00-1150
AR11714	Quartz Support Tube	11 001 171/4
AR2216/4	U Tube	34 001 339/4

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AEC3045

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AEC3047

AEC3052

AR01032

AEC3056

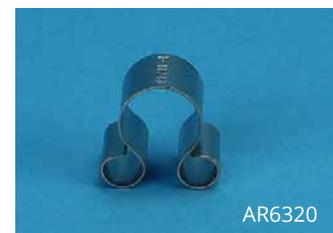
## Ash Inserts and Crucibles

ALPHA	DESCRIPTION	PACK SIZE	ELEMENTAR®	LECO®
AEC3065	Ash Crucible, Stainless Steel	EA	16.00-1104	
AR00087	Ash Finger Ceramic	EA	05 000 087	
AR01189	Ash Finger High Temp	EA	15.00-1189	
AR026	Ceramic Ash Crucible	50		529-026, 529-055
AR10874	Ash Finger, Stainless Steel	EA	12.00.1087/4	
AR11364	Quartz Ash Finger	EA	11.02-1036/4	
AR1170/4	Quartz Ash Finger	EA	11.001 1170/4	
AR4961	Ceramic Ash Insert	10		614-961-110
AR7605	Ceramic Ash Insert for Liquids	10		617-605



## LECO® Compatible Heating Elements and Supplies

ALPHA	DESCRIPTION	UNIT	LECO®
AR25068	Heating Element Clamps	TruMac®	625-068
AR460	Thermocouple		774-460
AR5067	Heating Elements (6 pcs)	TruMac®	625-067
AR563	Short Braided Cable with Terminal Connection	CNS200	613-563
AR6224	Thermocouple		606-224
AR6319	Braided Cable	CNS200	606-319
AR6320	Heating Element Clamps	CNS200	606-320
AR6601	Heating Elements (4pcs)	CNS200	606-601
AR7073	Thermocouple		722-522/772-522/777-073
AR9566	Braided Cable	TruMac®	633-101-362/633-101-363



# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

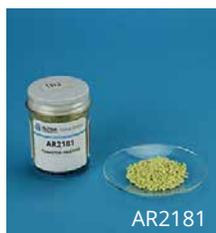
## Reagents, Catalysts and Chemicals

ALPHA	DESCRIPTION	PACK SIZE	COSTECH®	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AR171	AlphaDri Magnesium Perchlorate	454 g	021022	03 679 901	7713/14-0219	501-171-HAZ	A00000225
AR2174	AlphaSolve II 20-30 Mesh	500 g		03 679 900		502-174-HAZ	
AR2176	AlphaSolve II 8-20 Mesh	500 g				502-176-HAZ	
AR2188	Aluminum Oxide Pellets	200 g				502-188	
AR615	Furnace Reagent	100 g				501-609	
AR081	Glass Wool	454 g				501-081	
AR265	Glass Wool	227 g				763-265	
AR2359	Magnesium Oxide	200 cc				502-359	
AR049	N-Catalyst	50 g		03 002 262		502-049	
AR8379	Quartz Wool Strips	10 pcs				608-379	
AR426	Combustion Control for Solids	45 4g	021028		14-0022	501-426	A00000148
AR427	Combustion Control for Liquids	454 g				501-427	
AR2310	Steel Wool	45 4g				502-310	
AEB1002	Copper Oxide Wires	100 g	011002	05 001 070	14-0027/7730	502-190	A00000157
AR177	Quartz Wool	50 g	021026	03 679 908	14-0012	502-177/502-314	A00000154
AR140011	HT Catalyst	100 g			14-0011		A00000159
AR140014	LT Catalyst	50 g			14-0014		A00000160
AEB1008	Quartz Chips	100 g		03 679 907			
AR00086	Aluminum Oxide Wool	20 g		05 000 086			
AR00469	Cerium (IV) Oxide, Granular	30 ml		05 000 469			
AR00900	Quartz Chips	50 g		05 000 900			



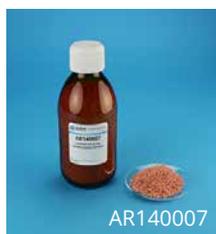
## Reagents, Catalysts and Chemicals (continued)

ALPHA	DESCRIPTION	PACK SIZE	ELEMENTAR®
AR01715	Cotton Wool	50 g	05 001 715
AR2181	Tungsten (VI) Oxide for Filling Combustion Tube	60 g	11.02-0008
AR20017	Tungsten (VI) Oxide Powder, Sample Additive	25 g	11.02-0017
AR20024	Tungsten (VI) Oxide Powder, Sample Additive	90 g	11.02-0024
AR02530	Tungsten, Granulated	500 g	12.00-0040
AR02530X	Tungsten Kit, Complete, Premium (Granulate + Spacer)		12.01-0045
AR22365	Silver Wool	50 g	22 131 365
AEB1406	Zinc Powder	50 g	29.00-0092
AEB1304	Brass Wool	50 g	38.00-0124
AR01008	Corundum Balls	50 g	50 008 467



## Copper Sticks, Oxides and Wires

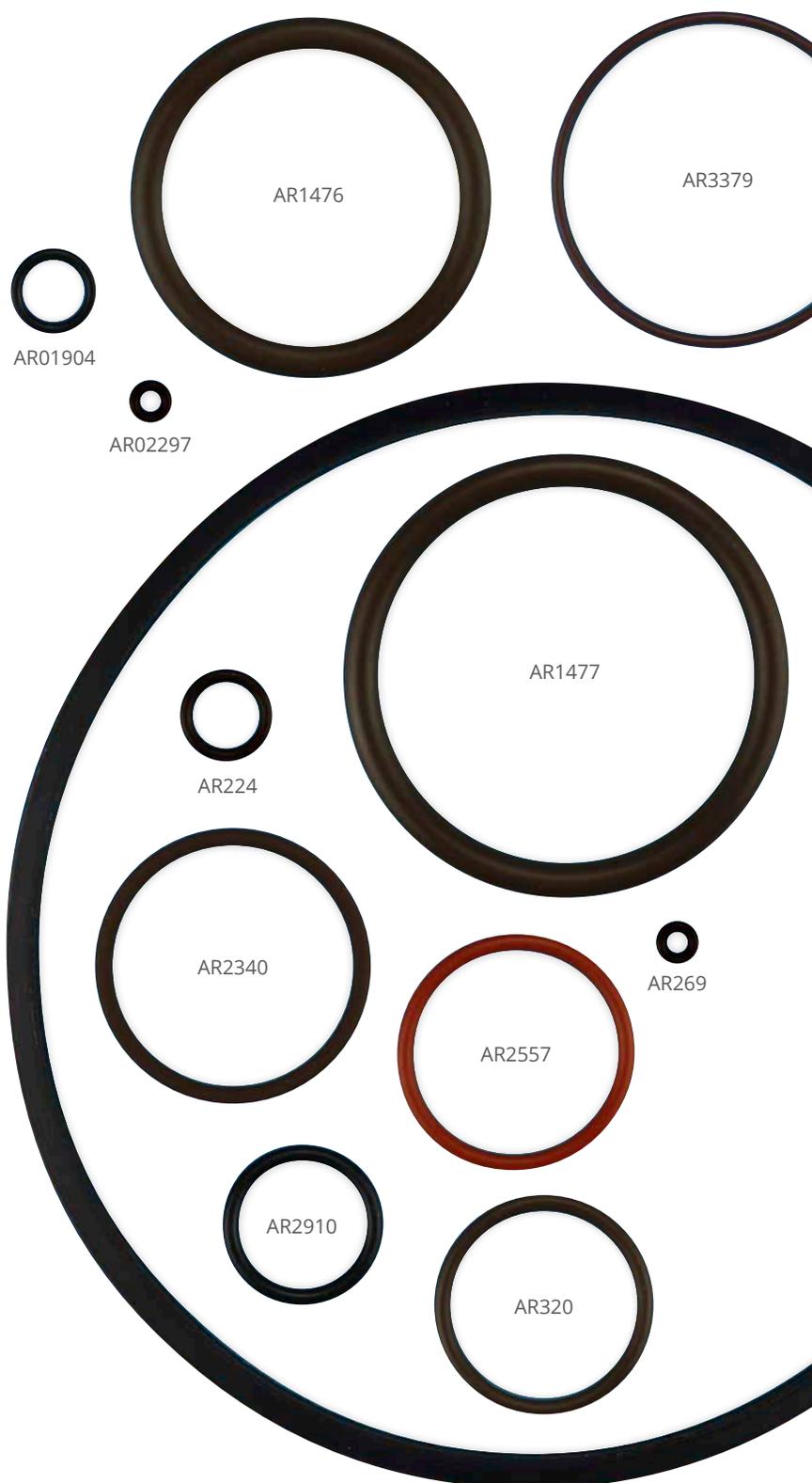
ALPHA	DESCRIPTION	SIZE	ELEMENTAR®	GERHARDT®	LECO®	VELP®
AR140007	Copper Sticks-Velp/Gerhardt	450 g	05 000 699	14-0007		A00000240
AR140246	High Usage Copper Sticks	450 g	05 000 699	14-0246		A00000240
AR189	Copper Sticks-Ampoule	100 g	05 000 699		502-189	
AR2304	Copper Sticks-Resealable	100 g	05 000 699		502-304	
AR2304-500	Copper Sticks-Resealable	500 g	05 000 699		502-304-500	
AR621	Copper Turnings				501-621	
AEB1002	Copper Oxide Wire	100 g	05 001 070	14-0027	502-190	A00000157
AR01029	Copper Oxide Wire	250 g	03 679 905			
AR01039	Copper Oxide Wire-Fine	250 g	05 001 039			

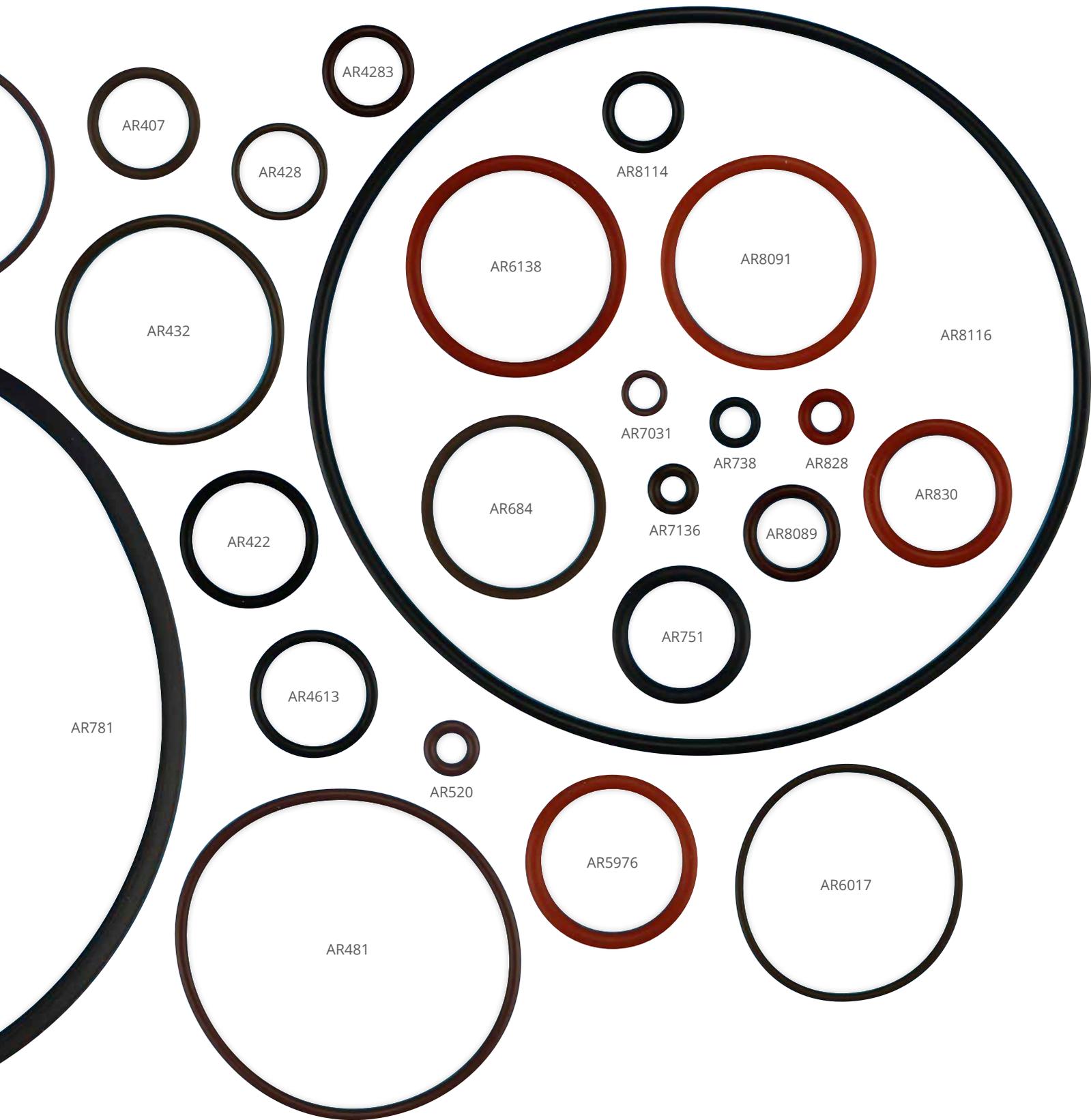


# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

## LECO® Compatible O-rings and Gaskets

ALPHA	DESCRIPTION	LECO®
AR01904	O-ring	625-601-904
AR02297	O-ring	625-602-297
AR1476	O-ring	611-476
AR1477	O-ring	611-477
AR224	O-ring	760-224
AR2340	O-ring	612-340
AR2557	O-ring	702-557
AR269	O-ring	772-269
AR2910	O-ring	772-910
AR320	O-ring	773-320
AR3379	O-ring	763-379
AR407	O-ring	771-407
AR428	O-ring	760-226
AR4283	O-ring	774-283
AR432	O-ring	774-425
AR442	O-ring	601-442
AR4613	O-ring	774-613
AR481	O-ring	805-481
AR520	O-ring	772-520
AR5976	O-ring	765-976
AR6017	O-ring	776-017
AR6138	O-ring	616-138
AR684	O-ring	601-684
AR7031	O-ring	617-031
AR7136	O-ring	617-136
AR738	O-ring	772-738
AR751	O-ring	808-751
AR781	O-ring	778-120
AR8089	O-ring	608-089
AR8091	O-ring	608-091
AR8114	O-ring	778-114
AR8116	O-ring	778-116
AR828	O-ring	605-828
AR830	O-ring	605-830

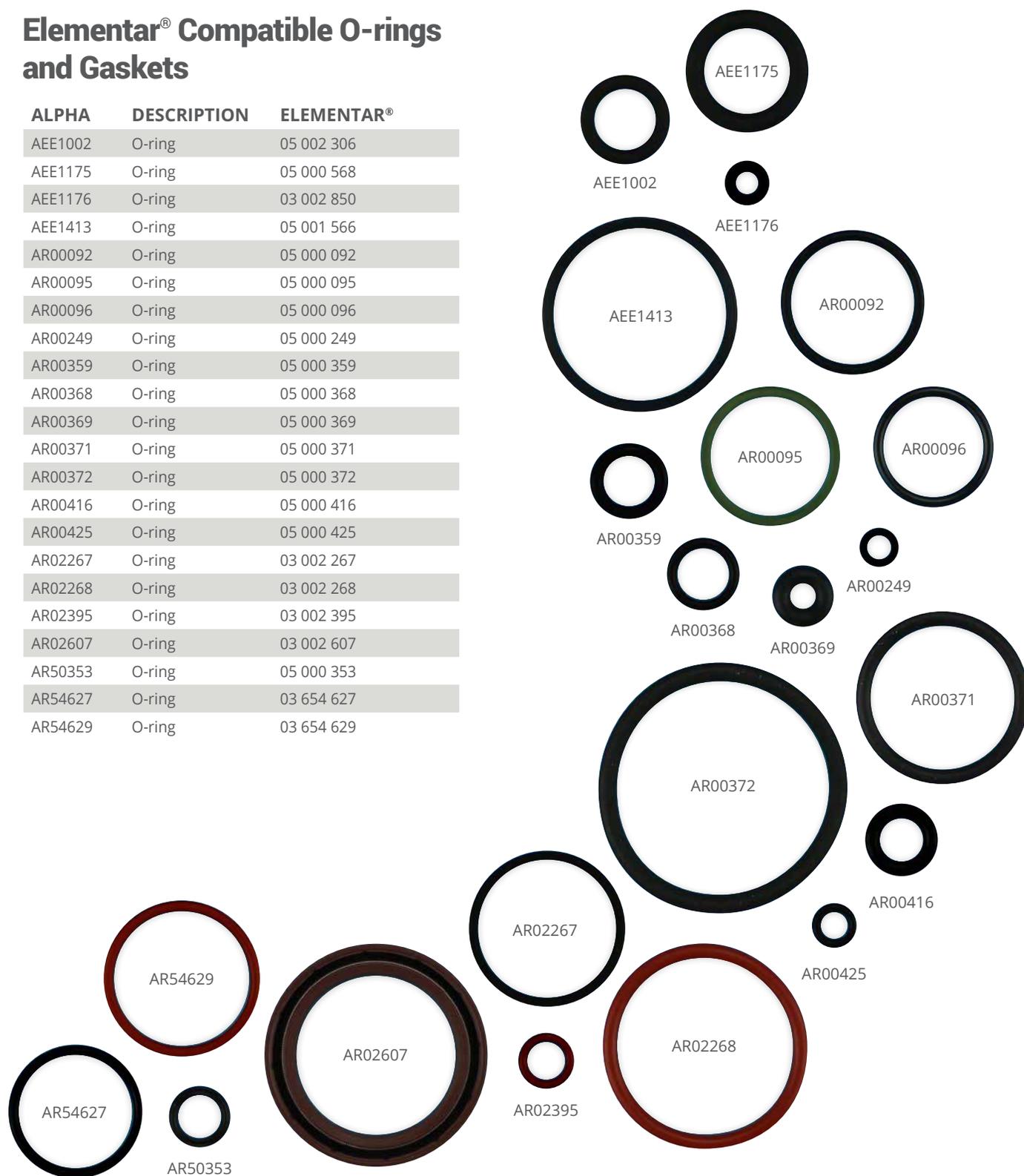




# Carbon, Hydrogen, Nitrogen, Oxygen and Sulfur Analyzers

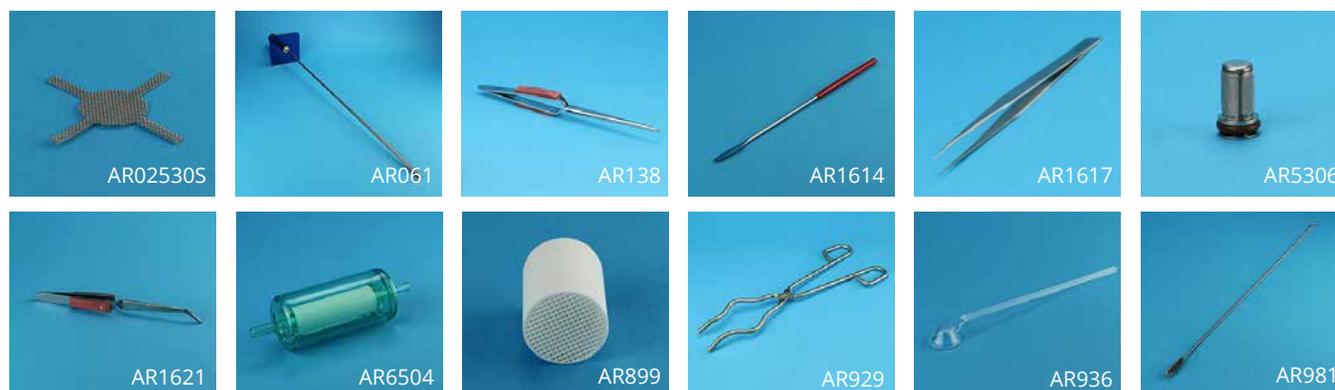
## Elementar® Compatible O-rings and Gaskets

ALPHA	DESCRIPTION	ELEMENTAR®
AEE1002	O-ring	05 002 306
AEE1175	O-ring	05 000 568
AEE1176	O-ring	03 002 850
AEE1413	O-ring	05 001 566
AR00092	O-ring	05 000 092
AR00095	O-ring	05 000 095
AR00096	O-ring	05 000 096
AR00249	O-ring	05 000 249
AR00359	O-ring	05 000 359
AR00368	O-ring	05 000 368
AR00369	O-ring	05 000 369
AR00371	O-ring	05 000 371
AR00372	O-ring	05 000 372
AR00416	O-ring	05 000 416
AR00425	O-ring	05 000 425
AR02267	O-ring	03 002 267
AR02268	O-ring	03 002 268
AR02395	O-ring	03 002 395
AR02607	O-ring	03 002 607
AR50353	O-ring	05 000 353
AR54627	O-ring	03 654 627
AR54629	O-ring	03 654 629



## Useful Operating Supplies and Accessories for LECO® and Elementar®

ALPHA	DESCRIPTION	LECO®	ELEMENTAR®
AEE2505	Gloves		05 000 094
AR02530S	Spacers for Tungsten		12.01-1008/4
AR061	Boat Puller	501-062	
AR1207	Pull Shaft with Finger Arm	611-207	
AR138	Self Closing Tweezer, 6.5"	760-138	
AR1614	Spatula	501-614	
AR1617	Tweezers, 5"		
AR1618	Curve Point Tweezers, 4.5"		03 001 248
AR2189	Tube Cleaner	502-007	
AR241	Vacuum Grease	501-241	
AR473	Funnel for Quick Disconnect Tube	502-023	
AR5306	Secondary Filter	775-306	
AR1621	Curved Self Closing Tweezer, 6.5"		
AR6504	Particle Filter	616-504	
AR899	Honeycomb Support	780-899	
AR901	Glass Scoop	503-032	
AR9271	Radial Shaft Seal	609-271	
AR929	Tongs	761-929	
AR936	Large Glass Scoop	762-936	
AR9474	Finger Arm	609-474	
AR9728	Metal Shaft Bearing	609-728	
AR981	Wire Brush	601-981	



 *Alpha has been great! Most of my orders ship the same day I send in my request.*  
 -Tanya, Food Industry, Nebraska



# Sulfur, Carbon and Hydrogen Analyzers

## Sulfur and Carbon Analysis by Combustion

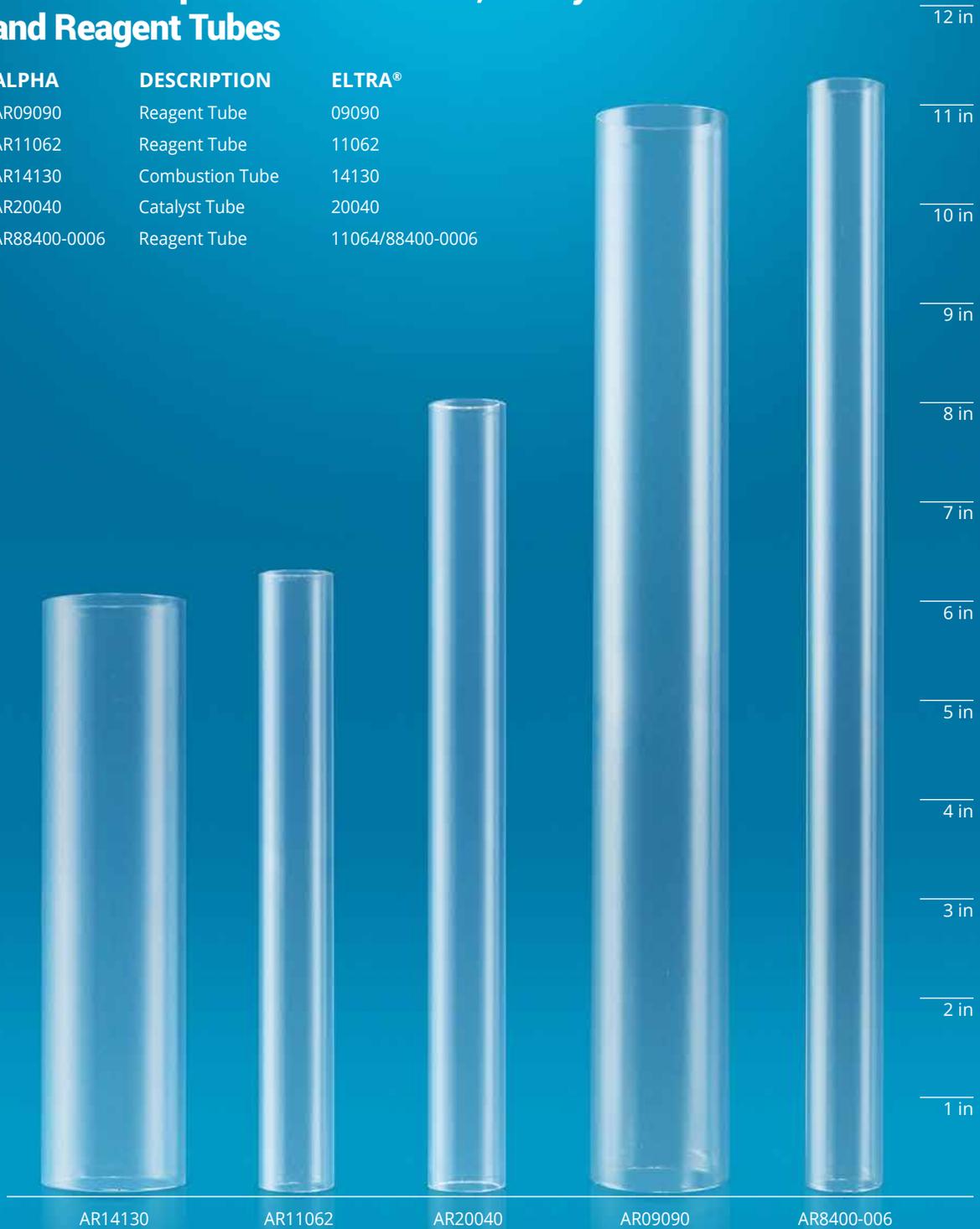
A wide range of elemental analyzers is used to determine the sulfur and carbon content. Generally, elemental analyzers ignite the sample in an oxygen stream and determine the released gases such as  $\text{SO}_2$  and  $\text{CO}_2$  with infrared cells.

Organic samples are usually characterized by a high carbon content (60 – 100%) and combustibility (e.g. coal, coke, wood). The complete release of carbon and sulfur takes place at temperatures of approx.  $1,300^\circ\text{C}$  (or less). For this purpose analyzers with a resistance furnace are most suitable.



# ELTRA® Compatible Combustion, Catalyst and Reagent Tubes

ALPHA	DESCRIPTION	ELTRA®
AR09090	Reagent Tube	09090
AR11062	Reagent Tube	11062
AR14130	Combustion Tube	14130
AR20040	Catalyst Tube	20040
AR88400-0006	Reagent Tube	11064/88400-0006



# Sulfur, Carbon and Hydrogen Analyzers

## LECO® Compatible Combustion, Catalyst and Reagent Tubes

ALPHA	DESCRIPTION	LECO®
AR01871	Reagent Tube	626-001-871
AR541	Reagent Tube	767-541
AR6327	Reagent Tube	606-327
AR9455	Reagent Tube	619-455



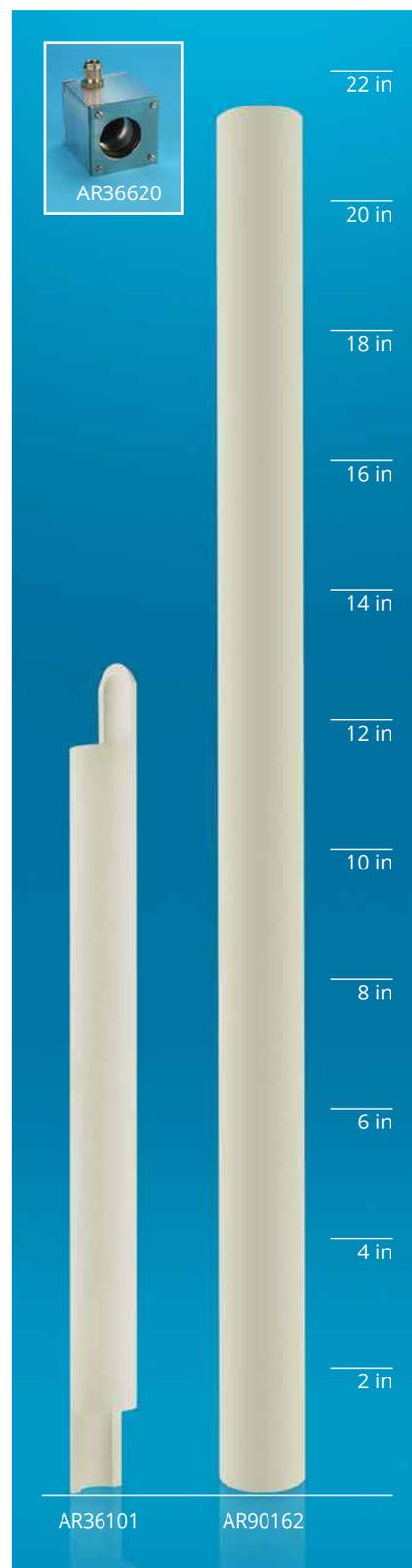
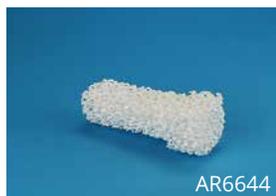
## ELTRA® Compatible Ceramic Combustion Tubes and Supplies

ALPHA	DESCRIPTION	ELTRA®
AR36101	Inner Combustion Tube	36101
AR36445	Sample Platform	36445
AR36465	Platform Plate	36465
AR36620	Dust Trap	36620
AR70380	Combustion Tube Outer O-ring	70380
AR70410	Dust Trap O-ring	70410
AR90162	Ceramic Combustion Tube	90162



## LECO® Compatible Boat Stops

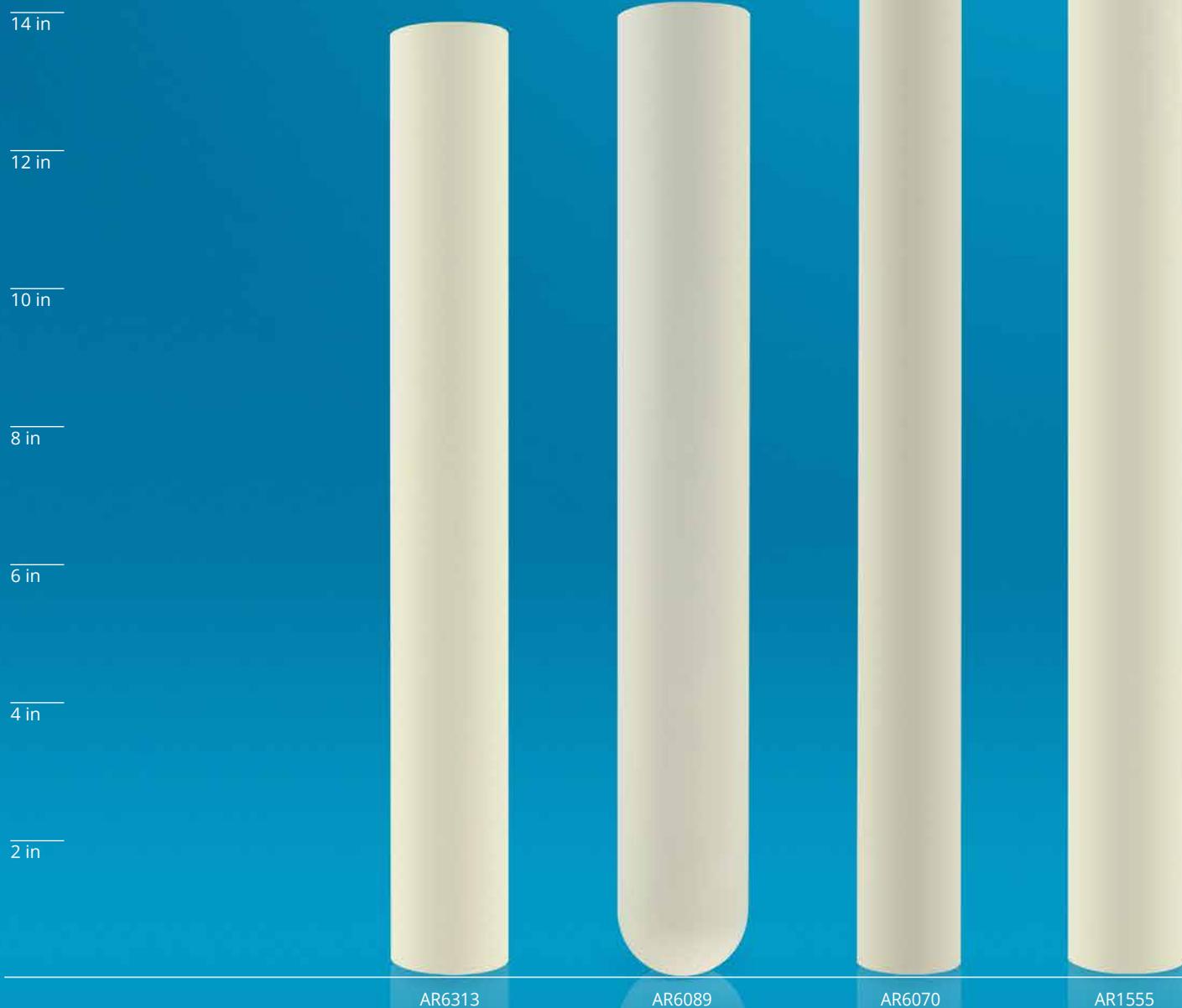
ALPHA	DESCRIPTION	ANALYZER	LECO®
AR6086	Ceramic Boat Stop	SC144	606-086
AR6308	Ceramic Boat Stop	SC832/632/444/432	606-308
AR6644	Stepped Ceramic Boat Stop	SC444/432	606-444
AR9012	Ceramic Boat Stop	SC132/32	529-012
AR9022	Ceramic Boat Stop	SC132/32	529-022
AR9023	Ceramic Boat Stop	SC132/32	529-028



# Sulfur, Carbon and Hydrogen Analyzers

## LECO® Compatible Ceramic Combustion Tubes

	ALPHA	DESCRIPTION	ANALYZER	LECO®
18 in	AR1554	Outer Combustion Tube	SC832	625-601-554
	AR1555	Inner Combustion Tube	SC832	625-601-555
	AR3932	Outer Combustion Tube Assembly	SC132/32	773-932
	AR6070	Inner Combustion Tube	SC144	616-070
16 in	AR6089	Outer Combustion Tube	SC144	616-089
	AR6309	Outer Combustion Tube	SC632/444/432	606-309
	AR6313	Inner Combustion Tube	SC632/444/432	606-313
	AR9011	Ceramic Liner	SC132/32	529-011





AR6309

AR1554

AR3932

AR9011

# Sulfur, Carbon and Hydrogen Analyzers

## LECO® Compatible Ceramic Combustion Tubes and O-rings

ALPHA	DESCRIPTION	ANALYZER	LECO®
AR1476	O-ring Inner Combustion Tube	SC832/632/444/432	611-476
AR1477	O-ring Outer Combustion Tube	SC832/632/444/432	611-477
AR3897	O-ring Outer Combustion Tube	SC144	783-897
AR6068	O-ring Inner Combustion Tube	SC144	616-068



*I just received my order from Alpha (that I placed ONLY two days ago). The parts are an exact match to the OEM and half the price. Thank you Alpha.*

*-Bobby, University, Florida*

## LECO® Compatible Lances and Supplies

ALPHA	DESCRIPTION	ANALYZER	LECO®
AR01302	O-ring for AR6254/AR602	SC632/832	625-401-302
AR01691	Ceramic Lance w/o Autoloader	SC832	626-001-691
AR2402	Ceramic Lance Assembly	SC132/32	772-402
AR602	Ceramic Lance w/Autoloader	SC832	625-602-187
AR6254	Ceramic Lance w/Autoloader	SC632	625-401-351
AR6333	O-ring for AR6632	SC444/432/632	606-333
AR6632	Ceramic Lance w/o Autoloader	SC444/432/632	616-632

## LECO® Compatible Purge Tubes and Supplies

ALPHA	DESCRIPTION	ANALYZER	LECO®
AR01301	O-ring for AR1692/AR02467/ AR1317	SC832/632	625-401-301
AR01692	Purge Tube w/o Autoloader	SC832	626-001-692
AR02467	Purge Tube w/Autoloader	SC832	626-002-467
AR1317	Purge Tube w/Autoloader	SC632	625-401-294/625-401-317
AR4174	Purge Tube	SC132/32	774-174/789-116
AR6317	Purge Tube	SC632/444/432	789-114/606-317



AR01302



AR6333



AR01301



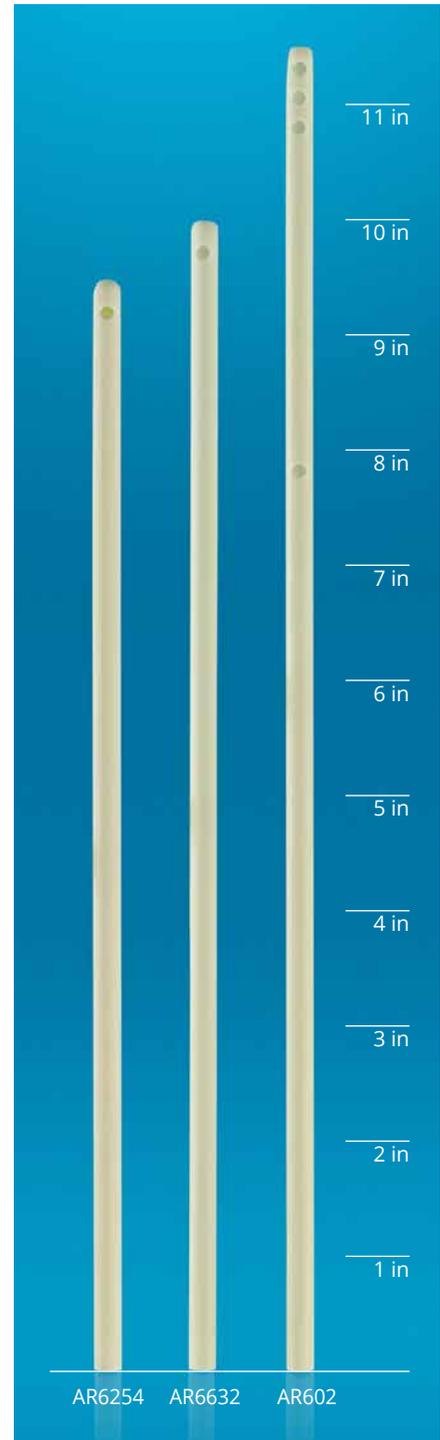
AR01692



AR4174



AR6317



AR6254

AR6632

AR602

# Sulfur, Carbon and Hydrogen Analyzers

## ELTRA® Compatible Heating Elements and Supplies

ALPHA	DESCRIPTION	ELTRA®
AR36242	Ceramic Plate	36242
AR36283	Heating Element Connector (with terminal connection)	36283
AR36288	Heating Element Connector Clamps	36288
AR36914	Thermocouple	36914
AR77500	Heating Element (4 pcs)	77500/77501
AR77505	Ceramic Spacers	77505



## LECO® Compatible Heating Elements and Supplies

ALPHA	DESCRIPTION	UNIT	ELTRA®
AR25068	Heating Element Clamps	SC632	625-068
AR460	Thermocouple	SC132/32	774-460
AR5067	Heating Elements (6 pcs)	SC632	625-067
AR563	Short Braided Cable with Terminal Connection	SC144/432/444/632	613-563
AR6224	Thermocouple	SC144/432/444/632	606-224
AR6319	Braided Cable	SC144/432/444	606-319
AR6320	Heating Element Clamps	SC144/432/444	606-320
AR6601	Heating Elements (4 pcs)	SC144/444/432	606-601
AR7073	Thermocouple	SC132/32	722-522/772-522/777-073
AR9566	Braided Cable	SC632/444/432	633-101-362/633-101-363
AR962	Heating Elements	SC132/32	772-508



## Reagents, Catalysts and Chemicals

ALPHA	DESCRIPTION	PACK SIZE	ELTRA®	LECO®
AR081	Glass Wool	454 g	90331/90332	501-081
AR170	Rare Earth Copper Oxide	50 g	90289/90290	502-170
AR171	AlphaDri Magnesium Perchlorate	454 g	90200	501-171-HAZ
AR2174	AlphaSolve II 20-30 Mesh	500 g	90210	502-174-HAZ
AR2176	AlphaSolve II 8-20 Mesh	500 g		502-176-HAZ
AR2301	Tungsten Trioxide	125 g		502-301
AR265	Glass Wool	227 g		763-265
AR321	AlphaCat	250 g		502-321
AR351	Halogen Scrubber	50 g		502-351
AR426	Combustion Control for Solids	454 g	88600-0008	501-426
AR427	Combustion Control for Liquids	454 g		501-427
AR608	Antimony	200 g	90234/90235	769-608-HAZ
AR610	Halogen Trap Material	225 g		769-610
AR636	Vanadium Pentoxide	250 g	90230	501-636



Quick delivery, great prices, and quality products. I couldn't ask for more!  
 -Mark, Oil Refining, Pennsylvania

# Sulfur, Carbon and Hydrogen Analyzers

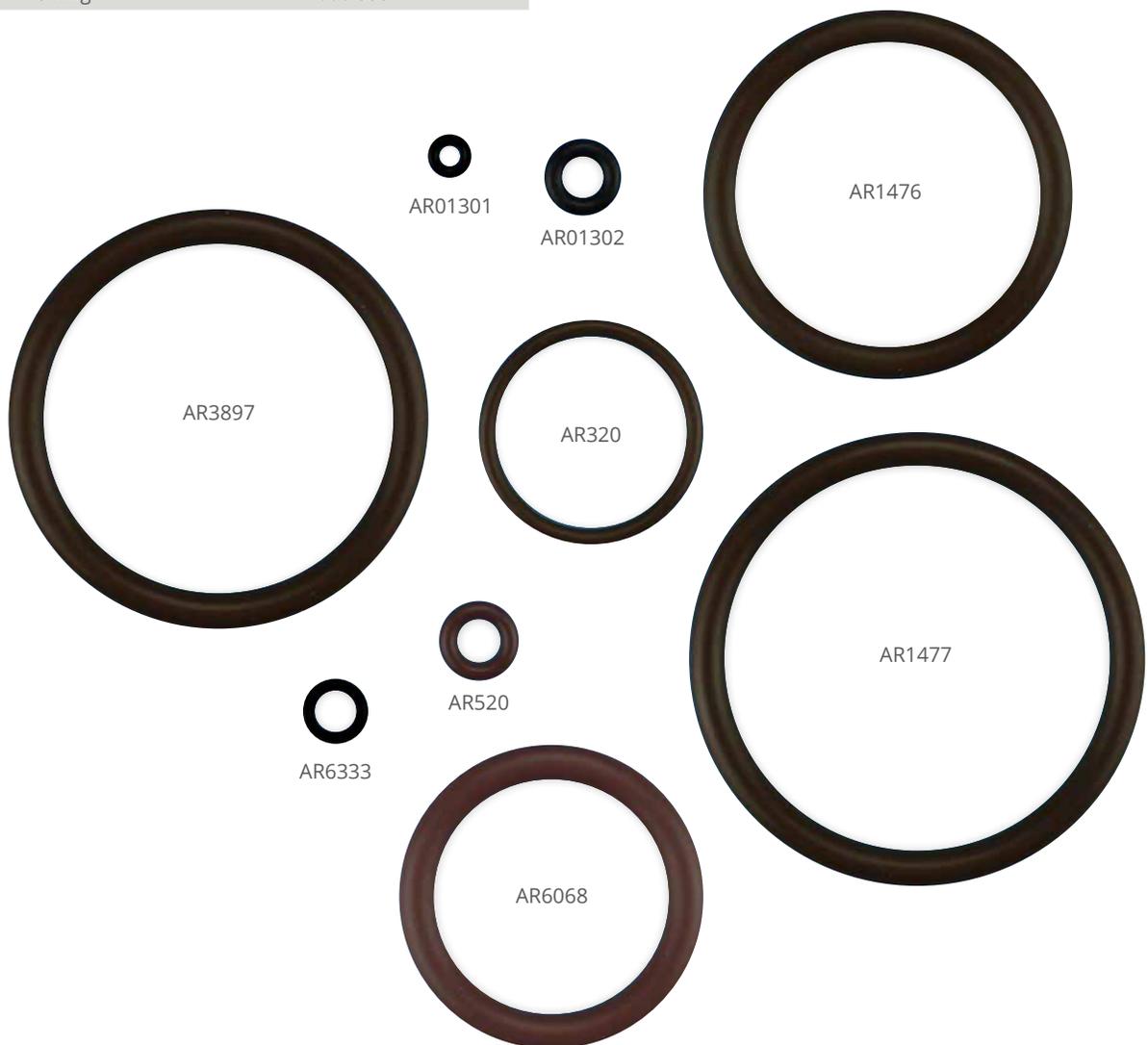
## ELTRA® Compatible O-rings

ALPHA	DESCRIPTION	ELTRA®
AR70120	O-ring	70120
AR70150	O-ring	70150
AR70210	O-ring	70210
AR70230	O-ring	70230
AR70320	O-ring	70320
AR70350	O-ring	70350
AR70370	O-ring	70370
AR70380	O-ring	70380
AR70390	O-ring	70390
AR70410	O-ring	70410
AR70427	O-ring	70427
AR70428	O-ring	70428



## LECO® Compatible O-rings

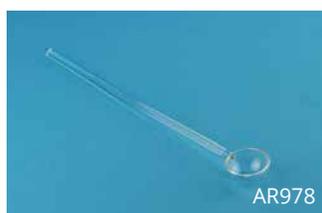
ALPHA	DESCRIPTION	LECO®
AR01301	O-ring	625-401-301
AR01302	O-ring	625-401-302
AR1476	O-ring	611-476
AR1477	O-ring	611-477
AR320	O-ring	773-320
AR3897	O-ring	783-897
AR520	O-ring	772-520
AR6068	O-ring	616-068
AR6333	O-ring	606-333



# Sulfur, Carbon and Hydrogen Analyzers

## Useful Operating Supplies and Accessories for ELTRA® and LECO®

ALPHA	DESCRIPTION	ELTRA®	LECO®
AR061	Boat Puller		501-062
AR73040	Tubing	11115/73040	
AR11185	Paper Filter	11185	
AR14045	Brush	14045	
AR14072	Heat Shield	14072	
AR1614	Spatula		501-614
AR1699	In Line Particle Filter		619-591-699
AR241	Vacuum Grease	92610	501-241
AR403	Tube Brush		606-403
AR473	Glass Funnel		502-023
AR5306	Secondary Filter		775-306
AR6063	Boat Puller		616-063
AR71010	Brush	71010	
AR71031	Brush	71031	
AR14027B	Brush	71036	
AR901	Glass Scoop		503-032
AR929	Tongs	90145	761-929
AR978	Glass Scoop		776-978
AR980	In Line Particle Filter	11170	768-980
AR981	Wire Brush		601-981



# Thermogravimetric Analysis



Thermogravimetric analysis (TGA) is conducted on an instrument referred to as a thermogravimetric analyzer. A thermogravimetric analyzer continuously measures mass while the temperature of a sample is changed over time. Mass, temperature, and time in thermogravimetric analysis are considered base measurements while many additional measures may be derived from these three base measurements.

A typical thermogravimetric analyzer consists of a precision balance with a sample pan located inside a furnace with a programmable control temperature. The temperature is generally increased at a constant rate (or for some applications the temperature is controlled for a constant mass loss) to incur a thermal reaction. The thermal reaction may occur under a variety of atmospheres including: ambient air, vacuum, inert gas, oxidizing/reducing gases, corrosive gases, carburizing gases, vapors of liquids or "self-generated atmosphere"; as well as a variety of pressures including: a high vacuum, high pressure, constant pressure, or a controlled pressure.

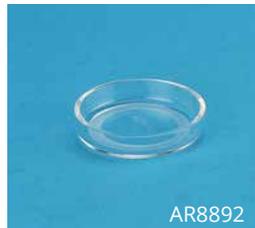
The thermogravimetric data collected from a thermal reaction is compiled into a plot of mass or percentage of initial mass on the Y axis versus either temperature or time on the X axis. This plot, which is often smoothed, is referred to as a TGA curve. The first derivative of the TGA curve (the DTG curve) may be plotted to determine inflection points useful for in-depth interpretations as well as differential thermal analysis.

A TGA can be used for materials characterization through analysis of characteristic decomposition patterns. It is an especially useful technique for the study of polymeric materials, including thermoplastics, thermosets, elastomers, composites, plastic films, fibers, coatings, paints, and fuels.

# Thermogravimetric Analysis

## Crucibles and Covers

ALPHA	DESCRIPTION	PACK SIZE	ELTRA®	LECO®
AR093	Small Quartz Crucible	EA		780-093
AR094	Small Quartz Cover	EA		780-094
AR26053	ThermoStep Ceramic Crucible Cover	EA	26053	
AR26063	ThermoStep Ceramic Crucible	EA	26063	
AR8891	Large Quartz Crucible	EA		778-891
AR8892	Large Quartz Cover	EA		778-892
AR9042	Glazed Ceramic Crucible (16cc)	5		529-042
AR9043	Glazed Ceramic Crucible Cover for AR9042	5		529-043
AR9047	Glazed Ceramic Crucible (20cc)	5		529-047
AR9048	Glazed Ceramic Crucible Cover for AR9047	5		529-048



## Custom Blends and Products

By consulting with the Alpha Resources® product development team, we can tailor your specific requirements for various raw material concentrations. We are willing to devote our time to accommodate our client's need for a new standard reference material that will be utilized in emerging technology markets.

## Custom Standards Production

Let the decades of experience within Alpha Resources® help you create a working standard from your in-house materials. With ISO17025/ISO17034 accreditations, we can guarantee industry recognized reliability.

## Custom Blends and Products (continued)

### Industry Case Study

**Alpha Resources® collaborates with Fortune 500 company to provide innovative solution for their strict internal quality control demands.**

#### Summary:

Our technical team was approached by a Fortune 500 company to help them with a Loss on Ignition or LOI/residue reference standard for testing a proprietary material they produce. Their process used a Thermal Gravimetric Analyzer (TGA) and was modified to test their specific materials. Initially we were able to provide them with a reference standard that had somewhat similar properties for them to reference. The company's product is highly proprietary and initially the customer was apprehensive about sharing further details with our team. Over time, as the customer became more familiar with Alpha Resources® and our personnel, their appreciation for our technical capabilities and confidence grew considerably. After a few years, the raw material for the initial reference material was exhausted and left them looking for another source. The customer came to Alpha asking us to assist them in finding a replacement material. Our project team reviewed in detail the customer's proprietary product and the specific needs of the customer. Through a collaborative and iterative process utilizing materials they found suitable to their testing, we were able to add our own proprietary process that resulted in a much better CRM for their use. The product had enhanced homogeneity and reliability far superior to the previous product(s) they have used. The new Certified Reference Material was produced under our Quality Management System that is accredited to ISO17034 for production of Reference Materials. The data provided is backed up by our ISO17025 accreditation for laboratory testing. We now exclusively produce and provide certificates of analysis for their internal usage.

#### Conclusion:

Using a proprietary process, Alpha Resources was able to deliver a superior CRM that enabled the customer to continue producing a reliable product.

 *Alpha Resources is one of our most valued suppliers. Not only do they deliver each and every time but they will work with us on outside-the-box projects such as custom manufacturing a control sample for a very specific application. Bottom line...we count on them and they deliver.*



# Certified Reference Materials/ Reference Materials

Alpha Resources® offers a wide variety of Certified Reference Materials and Reference Materials in a broad range of matrices and concentrations. Alpha Resources® obtains the highest caliber raw materials and ensures shelf-life and stability by using a proprietary process to eliminate sample preparation in most cases.

- Pins/Rings: Alpha's selection in material grades, along with the latest manufacturing technologies, and surface preparation, ensure shelf-life and stability for laboratory testing confidence.
- Chips: Using the latest machining technologies to ensure consistent chip size, cleanliness and homogeneity leads to a more stable chip reference material and a consistent analysis.

## Certified Quality

Alpha Resources® is pleased to have achieved ISO17025 and ISO17034 as well as ISO9001. Our scope of accreditation covers the testing of all our Certified Reference Materials and verifies our commitment to excellence through our quality system. All certifications and accreditations are available on our website [alpharesources.com](http://alpharesources.com) under "Support/Contact".



## Design Method and Certification Process

Alpha Resources® is committed to providing industry leading Reference Materials. This all begins with our certification process, which has been standardized, with a strong track record of precision and accuracy.

With the resources available to Alpha, we're able to provide certified values with minimal bias. You may ask how this is accomplished. We employ multiple analyzers from competing OEM's to eliminate any bias from the manufacturer. In addition, we have multiple technicians running these instruments. These certification runs can take weeks and even months until we're satisfied with the data.

Robust statistical techniques are utilized to create a value that is not only repeatable but also very reproducible. We also set ourselves apart from the competition by not limiting ourselves in terms of primary Reference Materials to establish our traceability.

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We offer a wide variety of compositions with various base materials to fit your specific needs. Our knowledge of the industry allows us to be on the cutting edge of new standard development.

We have a team of specialists who oversee our design and development of new reference material product lines. We're always willing to work with the customer to help them find just what they're looking for and our phone lines are open for quick consultations, if necessary.

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# Certified Reference Materials/Reference Materials

## Mercury in Coal Chlorine Values Reference Only

ALPHA	µg/g MERCURY	µg/g CHLORINE	% SULFUR	MEAN WEIGHT ASH	PACK SIZE
AR3701	0.071	"(1645)"	1.50	4.47	25 g
AR3702	0.04	"(1713)"	0.77	6.45	25 g
AR3703	0.1	"(<0.01)"	0.45	7.64	25 g
AR3704	0.12	"(<0.01)"	1.17	10.31	25 g
AR3705	0.16	"(<0.01)"	4.71	11.80	25 g

## C, H, N Coal Standards

ALPHA	% CARBON	% HYDROGEN	% NITROGEN	PACK SIZE
AR1905	77.1	1.88	(1.0) Reference Only	25 g
AR1906	60.98	4.16	1.09	25 g
AR1907	62.34	3.31	1.01	25 g
AR1908	67.68	3.97	1.29	25 g

## The Ultimates

ALPHA	MATERIAL	% ASH	% VOL.	% FIXED C	BTU	% SULFUR	% CARBON	% HYDROGEN	% NITROGEN	% CHLORINE	% OXYGEN	PACK SIZE
AR2771	Met Coke	7.53	(0.79)	(91.68)	13178	0.57	89.89	(0.23)	1.08	(0.024)	(0.70)	50 g
AR2772	Met Coke	9.35	(0.47)	(90.18)	12871	0.77	88.69	(<0.1)	1.1	(0.026)	(<001)	50 g
AR2773	Coal	5.03	29.48	65.49	12572	0.52	79.7	3.13	0.64	(<0.01)	10.98	50 g
AR2775	Coal	6.8	42.12	51.08	11713	0.39	69.38	4.59	0.93		17.91	50 g
AR2776	Coal	7.23	31.33	(61.44)	14392	0.93	80.96	4.99	1.62		(4.27)	50 g
AR2778	Coal	28.67	20.14	51.19	10498	0.68	62.34	3.31	1.01	0.1	4.03	50 g
AR2780	Coal	23.69	27.06	49.25	10892	3.61	60.98	4.16	1.09	(0.14)	6.47	50 g
AR2781	Coal	47.09	23.47	29.44	7409	2.01	41.49	3.08	0.75		(5.58)	50 g
AR2782	Coal	12.53	38.96	48.51	10762	6.18	60.65	4.38	1.15	<0.01	15.12	50 g
AR2783	Anthracite	17.58	6.08	76.34	11990	0.55	77.07	1.88	1.02	0.01	1.9	50 g

## Petroleum Coke

ALPHA	% SULFUR	% ASH	% VOL.	BTU	FIXED C	% C	% H	% N	% Ni	% Fe	% V	% Ca	%Si	PACK SIZE
AR742B	1.11	(0.12)	11.78	15,636	(88.10)	91.39	3.83	1.83	250 ppm	221 ppm	124 ppm	44 ppm	34ppm	50 g
									µg/gµµµµµ	µg/g	µg/g	µg/g	µg/g	
AR744	2.5	(0.27)	(0.57)	13,939	(99.16)	96.21	(0.22)	1.03	143 ppm	885 ppm	230 ppm	83 ppm	0.131 µg/g	50 g
									u/g/	µg/g	µg/g	µg/g		
AR745	0.55	(0.07)	7.08	14,934	(92.85)	95.6	1.9	0.97	0.094	0.0132	0.0051	0.0035	0.0055	50 g
AR747	3.51	3.2	6.83	14,196	(89.98)	88.78	2.05	1.18	0.023	0.6799	0.0542	0.1003	0.6469	50 g
AR756	5	(0.60)	6.85	14,204	(92.55)	87.89	1.89	1.79	281 ppm	282 ppm	1651 ppm	91 ppm	343 ppm	50 g
									µg/g	µg/g	µg/g	µg/g	µg/g	

For reference only. Please visit [Alphasources.com](http://Alphasources.com) for updated values.

## Ultra Low Sulfur Coal Standards

ALPHA	% SULFUR	PACK SIZE
AR1681	0	50 g
AR1682	0.022	50 g
AR1683	0.052	50 g
AR1684	0.098	50 g
AR1685	0.164	50 g

## Sulfur Only Coal and Coke Standards

ALPHA	% SULFUR	PACK SIZE
AR1700	0.35	50 g
AR1701	0.57	50 g
AR1702	0.73	50 g
AR1703	0.89	50 g
AR1704	1.06	50 g
AR1705	1.48	50 g
AR1706	2.07	50 g
AR1707	2.63	50 g
AR1708	3.03	50 g
AR1709	3.79	50 g
AR1710	4.25	50 g
AR1711	5.59	50 g
AR1712	5.88	50 g
AR1713	1.18	50 g
AR1714	1.71	50 g
AR1715	7.06	50 g
AR719	0.61	50 g
AR720	0.77	50 g
AR723	0.47	50 g
AR724	1.21	50 g
AR2712	0.43	50 g
AR2713	0.49	50 g
AR2714	0.906	50 g
AR2715	1.2	50 g
AR2716	2.47	50 g
AR2717	2.21	50 g
AR2719	2.58	50 g
AR2720	4.34	50 g
AR2721	5.56	50 g

# Certified Reference Materials/Reference Materials

## Mineral Analysis for Coal

ALPHA	% SILICON DIOXIDE	% ALUMINUM DIOXIDE	% TITANIUM DIOXIDE	% FERRIC OXIDE	% CALCIUM OXIDE	% MAGNESIUM OXIDE	% POTASSIUM OXIDE	% SODIUM OXIDE
AR2752A	40.1	14.44	1.98	4.89	20.84	4.59	0.26	0.33
AR2753	27.3	16.15	0.92	7.33	19.36	5.24	0.31	1.82
AR2754	48.91	23.92	1.2	18.78	1.04	0.85	2.37	0.23
AR2755	40.96	13.29	0.82	37.1	1.76	0.56	1.22	0.39
AR2760	90	49.48	27.36	1.33	15.16	1.07	0.77	2.47

## Proximate Coal and Coke

ALPHA	% SULFUR	% ASH	% VOL. MATTER	BTU	% FIXED C	PACK SIZE
AR1720	0.39	6.8	42.12	11713	51.08	50 g
AR1721	0.52	5.03	29.48	12572	65.49	50 g
AR1722	0.93	7.23	31.33	114392	61.44	50 g
AR1723	1.2	6.67	42.29	12937	51.04	50 g
AR1724	1.42	17.26	32.27	12216	50.47	50 g
AR1726	2.01	47.09	23.47	7409	29.44	50 g
AR1727	2.34	21.38	28.07	11645	50.51	50 g
AR1728	2.95	7.69	39.35	12357	52.96	50 g
AR1729	3.62	23.69	27.06	10892	49.25	50 g
AR1730	6.18	12.53	38.96	10762	48.51	50 g
AR1731	1.8	41.64	26.39	8377	31.97	50 g
AR1732	6.26	13.09	38.18	10686	48.73	50 g
AR1733	0.55	17.58	6.08	11990	76.34	50 g
AR1933	0.61	7.56	36.31	13181	56.13	50 g
AR732	0.47	6.57	1.15	13242	92.28	50 g
AR733	0.57	7.53	(0.79)	13178	(91.68)	50 g
AR734	0.77	9.35	(0.47)	12871	(90.18)	50 g

For reference only. Please visit [Alpharesources.com](http://Alpharesources.com) for updated values.



Wow, I can't believe the pricing. We are switching all our consumable purchases to Alpha. –Tim, Mining Industry, Virginia

% SULFUR TRIOXIDE	% PHOSPHORUS PENTOXIDE	% STRONTIUM OXIDE	% BARIUM OXIDE	% MANGANESE OXIDE	% UNDERTERMINED	% ASH CONTENT OF WHOLE COAL	PACK SIZE
10.45	0.3	0.09	0.07	0.03		Not Determined	50 g
19.17	0.48	0.39	0.51	(0.03)	(0.99)	5.03	50 g
1.28	0.22	0.06	0.09		1.01	23.69	50 g
0.74	0.19	0.02	0.11		0	Not Determined	50 g
0.16	0.39	0.3	0.07	0			50 g



# Certified Reference Materials/Reference Materials

## Residual Oil Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2891	Residual Oil	0.10650	0.0084	100 ml
AR2811	Residual Oil	0.15030	0.0045	100 ml
AR2892	Residual Oil	0.20000	0.0100	100 ml
AR2893	Residual Oil	0.30000	0.0300	100 ml
AR2809	Residual Oil	0.34600	0.0130	100 ml
AR2894	Residual Oil	0.40300	0.0340	100 ml
AR2895	Residual Oil	0.48000	0.0200	100 ml
AR2812	Residual Oil	0.61130	0.0332	100 ml
AR2896	Residual Oil	0.70000	3.0000	100 ml
AR2813	Residual Oil	0.78000	0.0400	100 ml
AR2897	Residual Oil	0.89800	0.0140	100 ml
AR2814	Residual Oil	1.02000	0.0300	100 ml
AR2818	Residual Oil	1.49000	0.0600	100 ml
AR2815	Residual Oil	2.01000	0.0600	100 ml
AR2819	Residual Oil	2.50000	0.1200	100 ml
AR2816	Residual Oil	3.02000	0.1500	100 ml
AR2898	Residual Oil	3.55000	0.1600	100 ml
AR2817	Residual Oil	4.09000	0.1000	100 ml
AR2899	Residual Oil	4.52000	0.1200	100 ml

## Ultra Low Kerosene Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR6201	Kerosene	0.00110	0.0002	100 ml
AR6207	Kerosene	0.00200	0.0003	100 ml
AR6208	Kerosene	0.00300	0.0015	100 ml
AR6209	Kerosene	0.00400	0.0008	100 ml
AR6202	Kerosene	0.00510	0.0003	100 ml
AR6210	Kerosene	0.00635	0.0041	100 ml
AR6211	Kerosene	0.00700	0.0007	100 ml
AR6212	Kerosene	0.00832	0.0065	100 ml
AR6213	Kerosene	0.00900	0.0008	100 ml
AR6203	Kerosene	0.01030	0.0007	100 ml
AR6204	Kerosene	0.01520	0.0006	100 ml
AR6205	Kerosene	0.01980	0.0010	100 ml
AR6206	Kerosene	0.40000	0.0009	100 ml

*For reference only. Please visit [Alpharesources.com](http://Alpharesources.com) for updated values.*

## Crude Oil Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2941	Crude Oil	0.01020	0.0009	100 ml
AR2942	Crude Oil	0.02050	0.0012	100 ml
AR2943	Crude Oil	0.03130	0.0023	100 ml
AR2944	Crude Oil	0.04150	0.0280	100 ml
AR2041	Crude Oil	0.05300	0.0050	100 ml
AR2945	Crude Oil	0.06190	0.0030	100 ml
AR2946	Crude Oil	0.07200	0.0034	100 ml
AR2947	Crude Oil	0.08240	0.0045	100 ml
AR2948	Crude Oil	0.09250	0.0044	100 ml
AR2042	Crude Oil	0.10500	0.0300	100 ml
AR2043	Crude Oil	0.22000	0.0100	100 ml
AR2044	Crude Oil	0.41000	0.0600	100 ml
AR2045	Crude Oil	0.61900	0.0400	100 ml
AR2046	Crude Oil	0.81600	0.0520	100 ml
AR2047	Crude Oil	0.99000	0.0400	100 ml
AR2048	Crude Oil	2.01000	0.0500	100 ml
AR2049	Crude Oil	3.08000	0.1400	100 ml
AR2050	Crude Oil	4.24000	0.4100	100 ml
AR2051	Crude Oil	5.56000	0.2400	100 ml

## Kerosene Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2849	Kerosene	<0.001		100 ml
AR2841	Kerosene	0.01250	0.0015	100 ml
AR2951	Kerosene	0.02110	0.0019	100 ml
AR2842	Kerosene	0.02900	0.0040	100 ml
AR2952	Kerosene	0.04200	0.0051	100 ml
AR2843	Kerosene	0.04900	0.0020	100 ml
AR2953	Kerosene	0.06200	0.0070	100 ml
AR2954	Kerosene	0.07100	0.0030	100 ml
AR2955	Kerosene	0.08010	0.0016	100 ml
AR2956	Kerosene	0.09000	0.0040	100 ml
AR2844	Kerosene	0.13130	0.0083	100 ml
AR2845	Kerosene	0.19680	0.0070	100 ml
AR2846	Kerosene	0.30000	0.0200	100 ml
AR2847	Kerosene	0.39500	0.0140	100 ml
AR2848	Kerosene	0.50500	0.0060	100 ml

# Certified Reference Materials/Reference Materials

## Ultra Low #2 Diesel Oil Standards

ALPHA	TYPE	% SULFUR	CHLORINE	PACK SIZE
AR2868	#2 Diesel	<0.0001		100 ml
AR2882	#2 Diesel	0.00048	0.6000	100 ml
AR2881	#2 Diesel	0.00100	0.0001	100 ml
AR2869	#2 Diesel	0.00210	0.0003	100 ml
AR2879	#2 Diesel	0.00250	0.0002	100 ml
AR2878	#2 Diesel	0.00490	0.0004	100 ml
AR2871	#2 Diesel	0.01050	0.0012	100 ml
AR2872	#2 Diesel	0.02070	0.0014	100 ml
AR2873	#2 Diesel	0.03000	0.0010	100 ml
AR2874	#2 Diesel	0.04000	0.0020	100 ml
AR2875	#2 Diesel	0.05070	0.0034	100 ml
AR2865	#2 Diesel	0.06000	0.0045	100 ml
AR2876	#2 Diesel	0.06900	0.0020	100 ml
AR2866	#2 Diesel	0.07860	0.0052	100 ml
AR2867	#2 Diesel	0.08900	0.0050	100 ml
AR2877	#2 Diesel	0.10550	0.0045	100 ml

## High Viscosity Residual Oil Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR3181	Residual Oil	0.29200	0.1100	100 ml
AR3182	Residual Oil	0.90370	0.0320	100 ml

## Waste Oil Standards

ALPHA	TYPE	µg/g CHLORINE	µg/g CHROMIUM	µg/g LEAD	PACK SIZE
AR3161	Waste Oil	506	5.07	49.8	50 ml
AR3162	Waste Oil	1013	9.8	98.7	50 ml
AR3163	Waste Oil	1898	20.7	210.2	50 ml

ALPHA	TYPE	µg/g ARSENIC	PACK SIZE
AR3171	Waste Oil	2	50 ml
AR3172	Waste Oil	4.2	50 ml
AR3173	Waste Oil	10.5	50 ml

## Ultimate Residual Fuel Oil Standards

ALPHA	TYPE	% SULFUR	% CARBON	PACK SIZE
AR1622	Residual Oil	2.08000	85.54	100 ml

*For reference only. Please visit [Alpharesources.com](http://Alpharesources.com) for updated values.*

## JP Fuel Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2921	JP Fuel	0.00510	0.0003	100 ml
AR2922	JP Fuel	0.01100	0.0020	100 ml
AR2923	JP Fuel	0.01980	0.0006	100 ml
AR2924	JP Fuel	0.03000	0.0016	100 ml
AR2925	JP Fuel	0.04330	0.0027	100 ml
AR2926	JP Fuel	0.05000	0.0020	100 ml
AR2927	JP Fuel	0.06200	0.0090	100 ml
AR2928	JP Fuel	0.09300	0.0030	100 ml

## Nitrogen in Crude Oil Standards

ALPHA	TYPE	PPM NITROGEN	PACK SIZE
AR3032	Crude Oil	67	100 ml
AR3033	Crude Oil	749	100 ml
AR3034	Crude Oil	1641	100 ml

## Lube Oil Standards

ALPHA	TYPE	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2838	Lube Oil	0.01000	0.0012	100 ml
AR2931	Lube Oil	0.02070	0.0009	100 ml
AR2932	Lube Oil	0.05240	0.0015	100 ml
AR2831	Lube Oil	0.07300	0.0020	100 ml
AR2933	Lube Oil	0.08050	0.0020	100 ml
AR2934	Lube Oil	0.10000	0.0100	100 ml
AR2832	Lube Oil	0.23000	0.0040	100 ml
AR2935	Lube Oil	0.35370	0.0072	100 ml
AR2833	Lube Oil	0.51100	0.0400	100 ml
AR2834	Lube Oil	0.75300	0.0140	100 ml
AR2936	Lube Oil	0.87000	0.0500	100 ml
AR2835	Lube Oil	1.00000	0.1000	100 ml
AR2937	Lube Oil	1.51330	0.0301	100 ml
AR2836	Lube Oil	2.00000	0.1000	100 ml
AR2938	Lube Oil	2.51620	0.0326	100 ml
AR2839	Lube Oil	3.02000	0.0500	100 ml
AR2939	Lube Oil	3.50000	0.1750	100 ml
AR2837	Lube Oil	4.07000	0.3200	100 ml
AR2857	Lube Oil	5.01000	0.0180	100 ml
AR2858	Lube Oil	6.04300	0.0370	100 ml

# Certified Reference Materials/Reference Materials

## Chlorine in Paraffin Oil Standards

ALPHA	TYPE	% CHLORINE	PACK SIZE
AR2004	Paraffin Oil	0.00090	100 ml
AR2005	Paraffin Oil	0.01200	100 ml
AR2006	Paraffin Oil	0.05100	100 ml
AR2007	Paraffin Oil	0.12200	100 ml
AR2008	Paraffin Oil	0.20000	100 ml
AR2009	Paraffin Oil	0.44620	100 ml
AR2010	Paraffin Oil	0.56050	100 ml
AR2011	Paraffin Oil	1.00000	100 ml
AR2012	Paraffin Oil	1.95000	100 ml
AR2013	Paraffin Oil	3.06000	100 ml
AR2014	Paraffin Oil	3.98000	100 ml
AR2015	Paraffin Oil	5.04000	100 ml

## #2 Diesel Oil Standards

ALPHA	TYPE	% SULFUR	% CHLORINE	PACK SIZE
AR2821	#2 Diesel	0.15000	0.0100	100 ml
AR2961	#2 Diesel	0.20600	0.0094	100 ml
AR2822	#2 Diesel	0.30500	0.0100	100 ml
AR2962	#2 Diesel	0.40000	0.0200	100 ml
AR2823	#2 Diesel	0.53000	0.0300	100 ml
AR2963	#2 Diesel	0.61000	0.0200	100 ml
AR2824	#2 Diesel	0.70000	0.0200	100 ml
AR2964	#2 Diesel	0.80800	0.0300	100 ml
AR2965	#2 Diesel	0.85300	0.3000	100 ml
AR2825	#2 Diesel	1.02000	0.0500	100 ml
AR2826	#2 Diesel	1.50000	0.8000	100 ml
AR2827	#2 Diesel	1.86700	0.0750	100 ml
AR2828	#2 Diesel	2.53000	0.1200	100 ml
AR2829	#2 Diesel	2.95000	0.2000	100 ml

## Sulfur in Isooctane Standards

ALPHA	µg/g SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR3101	0.9	0.30	100 ml
AR3102	4.7	0.80	100 ml
AR3103	12.4	1.40	100 ml
AR3104	28.6	2.40	100 ml
AR3105	52.1	3.80	100 ml

*For reference only. Please visit [Alpharesources.com](http://Alpharesources.com) for updated values.*

## Sulfur and Chlorine in Lube Oil Heavy Concentrations

ALPHA	TYPE	% SULFUR	% CHLORINE	PACK SIZE
AR3501	Lube Oil	7.00	4.00	100 ml
AR3502	Lube Oil	5.00	2.00	100 ml
AR3503	Lube Oil	4.00	7.00	100 ml
AR3504	Lube Oil	2.00	5.00	100 ml
AR3505	Lube Oil	1.00	0.50	100 ml
AR3506	Lube Oil	0.50	1.00	100 ml
AR3507	Lube Oil	<0.0001	<0.0001	100 ml

## Desulfurized Hydrocarbon Standards

ALPHA	MATRIX	% SULFUR	PACK SIZE
AR3116	Isooctane	<0.0001	100 ml
AR3117	Kerosene	<0.0001	100 ml
AR3118	#1 Diesel	<0.0001	100 ml
AR3119	#2 Diesel	<0.0001	100 ml
AR3120	Paraffin Oil	<0.0001	100 ml
AR3121	Gasoline	<0.0001	100 ml

## Vacuum Gas Oil Standard

ALPHA	% SULFUR	PPM NITROGEN	PACK SIZE
AR2077	0.45	1267	100 ml

## Sulfur in Gasoline Standards

ALPHA	TYPE	% SULFUR	PACK SIZE
AR3001	Gasoline	0.000101	100 ml
AR3002	Gasoline	0.005200	100 ml
AR3003	Gasoline	0.010300	100 ml
AR3004	Gasoline	0.030800	100 ml
AR3005	Gasoline	0.050000	100 ml
AR3006	Gasoline	0.070300	100 ml
AR3007	Gasoline	0.090800	100 ml
AR3008	Gasoline	0.119000	100 ml
AR3009	Gasoline	(0.2000)	100 ml
AR3001	Gasoline		100 ml
AR3012	Gasoline	0.000000	100 ml
AR3013	Gasoline	0.001000	100 ml
AR3014	Gasoline	0.001500	100 ml
AR3015	Gasoline	0.002000	100 ml

# Certified Reference Materials/Reference Materials

## Ultimate Oil Analysis Standards

ALPHA	OIL TYPE	PPM Fe	PPM Ni	PPM V	PPM Si	PPM Cu	PPM Na	API 60°F	PPM ORGANIC CL
AR2070	Wyoming Sweet Crude	1.94	0.92	0.39	0.42	0.82	2.74		<1.0
AR2071	North Sea Sweet Crude	4.33	2.24	1.91	1.05	0.1	5.76	39.75	<1.00
AR2072	Alaska North Slope Crude	4.60	16.90	43.6	1.3	0.3	2.6	28.2	
AR2078	Vacuum Gas Oil	0.18	0.06	0.13	0.15	0.14	0.87	20.2	
AR2755	40.96	13.29	0.82	37.1	1.76	0.56	1.22	0.39	0.74
AR2756	43.95	16.9	1.1	25.2	6.32	1.37	1.48	0.25	3.38
AR2760	90	49.48	27.36	1.33	15.16	1.07	0.77	2.47	0.16

## Ultimate Oil Analysis Plus Distillation Standards Distillation (°F)

ALPHA	OIL TYPE	IBP	5	10	20	30	40	50	60	70	80	90	95	EP	API 60°F
AR2074	Kerosine (K-1)	369	391	399	409	418	427	435	446	454	467	486	503	523	40.2
AR2075	#2 Diesel	363	417	437	459	476	495	510	520	544	566	595	619	635	35.1
AR2076	#1 Diesel	455	468	471.6	476.8	482.4	486	490	495	501	508	520		549	47
AR2078	Vacuum Gas Oil	0.18	0.06	0.13	0.15	0.14	0.87	20.2				438.8	0.342		0.0386
AR2755	40.96	13.29	0.82	37.1	1.76	0.56	1.22	0.39	0.74	0.19	0.02	0.11		0	Not Determined
AR2756	43.95	16.9	1.1	25.2	6.32	1.37	1.48	0.25	3.38	0.16	0.04	0.06		0.08	29
AR2760	90	49.48	27.36	1.33	15.16	1.07	0.77	2.47	0.16	0.39	0.3	0.07	0		

## JP-8 Jet Fuel Standard

ALPHA	TOTAL ACID (mg KOH/g)	AROMATICS (VOL %)	OLEFINS (VOL %)	% SULFUR	MERCAPTAN SULFUR (WT %)
AR5201	0.0025	17.70	2.45	0.178	0.0019

## C,H,N,S, BTU Standards

ALPHA	TYPE	% CARBON	% HYDROGEN	% NITROGEN	% SULFUR	GROSS BTU/LB	PACK SIZE
AR000	Paraffin Oil	85.80	14.20	<0.0001	<0.0001	19,888	100 ml
AR100	Residual Oil	88.00	10.10	0.19	0.93	18,408	100 ml
AR150	Residual Oil	89.00	10.29	0.018	0.26	18,514	100 ml
AR327	Kerosene	85.47	13.97	0.0002	0.136	19,790	100 ml
AR330	#2 Diesel Oil	87.05	13.08	0.0098	0.034	19,418	100 ml

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TOTAL CL PPM	% BENZENE WEIGHT	PPM NITROGEN	% SULFUR	SALT LB/ MBBL	% CARBON WEIGHT	PACK SIZE
0.42	67	0.082	0.75	0.75		500 ml
0.18	0.37	749.9	0.175	2.53		500 ml
1.5	0.18	1780	1.15	2.8		500 ml
		438.8	0.342		0.0386	500 ml
0.19	0.02	0.11		0	Not Determined	50 g
0.16	0.04	0.06		0.08	29	50 g
0.39	0.3	0.07	0			50 g

CARBON	CETANE INDEX	CLOUD POINT	POUR POINT	% SULFUR	VISCOSITY CST	FLAST POINT (°F)	PACK SIZE
<0.1	44.3	-48°C	-53°C	0.0006	1.69 @ o40C	138	500 ml
<0.1		10.6°F	-7.2°F	0.0379	2.67 @ o100C	162	500 ml
0.025	66.7	19.6°F	20.0°F	0.003	2.49 @ o100C	219	500 ml
							500 ml
							50 g
							50 g
							50 g

API GRAVITY (60°F)	FREEZE POINT (°F)	BTU (/LB)	FLAST POINT D93	FLAST PT D56	VISCOSITY (CST)
41.85	-42.75	18536	21(mm)	124.1°F	6.14 @ -4°F

## Engine Oil Standards

ALPHA	% Ash	% Zn	% Ca	% Mg	% P	% S	ASTM D2896 BASE NUMBER	VISCOSITY (CST 100 °C)	VISCOSITY (CST/40 °C)	PACK SIZE
AR6301	0.50	<0.001	<0.001	<0.001	<0.001	0.29	2.42	12.25	119.20	100 ml
AR6302	0.22	0.00	0.00	0.00	0.10	0.22	2.83	12.56	124.87	100 ml
AR6303	0.83	0.00	0.01	0.11	0.08	0.40	5.42	11.44	102.70	100 ml
AR6304	0.81	0.12	0.06	0.09	0.10	0.56	6.27	12.81	73.51	100 ml
AR6305	0.78	0.00	0.17	0.05	0.13	0.57	7.07	11.52	98.74	100 ml

# Certified Reference Materials/Reference Materials

## Nitrogen in Vacuum Gas Oil Standards

ALPHA	µg/g NITROGEN	PACK SIZE
AR3151	1.05	100 ml
AR3152	5.15	100 ml
AR3153	10.01	100 ml
AR3154	26.37	100 ml
AR3155	49	100 ml
AR3156	90	100 ml
AR3157	432	100 ml

## High Sulfur Residual Oil Standards

ALPHA	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2859	5.00	0.00	100 ml
AR2861	5.90	0.00	100 ml
AR2862	9.86	0.01	100 ml
AR2863	20.00	0.00	100 ml
AR2864	30.00	0.02	100 ml

## Low Sulfur Lube Oil Standards

ALPHA	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR3521	<0.0001		100 ml
AR3522	0.0036	0.0006	100 ml
AR3523	0.0052	0.0004	100 ml
AR3524	0.011	0.0020	100 ml
AR3525	0.021	0.0020	100 ml
AR3526	0.031	0.0060	100 ml
AR3527	0.041	0.0040	100 ml
AR3528	0.0505	0.0016	100 ml

## Sulfur & Lead in Gasoline Standards

ALPHA	µg/g SULFUR	µg/g LEAD	PACK SIZE
AR3111	1023	3.10	100 ml
AR3112	524	0.90	100 ml
AR3113	106	40	100 ml
AR3114	1.06	82	100 ml
AR3115	<1	<1	100 ml

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## Heavy Lube Oil V, Ni, S Standards

ALPHA	PPM VANADIUM	PPM NICKEL	% SULFUR	PACK SIZE
AR2901	407	75	4.25	50 ml
AR2902	271	50	3.11	50 ml
AR2903	168	22	2.002	50 ml
AR2904	104.01	18.1	1.053	50 ml
AR2905	50.2	9.9	0.5263	50 ml

## Lead in Gasoline Standards

ALPHA	% LEAD	PACK SIZE
AR2067	<0.0001	100 ml
AR2066	0.010	100 ml
AR2065	0.025	100 ml
AR2064	0.050	100 ml
AR2063	0.075	100 ml
AR2062	0.125	100 ml
AR2061	0.201	100 ml

## Viscosity Standards

ALPHA	MATRIX	VISCOSITY	PACK SIZE
AR3028	#1 Diesel	2.43 cSt @ 40°C	100 ml
AR3029	#2 Diesel	2.88 cSt @ 40°C	100 ml
AR3030	JP 8	5.6 cSt @ -20°C	100 ml
AR3031	Kerosene	1.33 cSt @ 40°C	100 ml

## API Standards

ALPHA	MATRIX	API	PACK SIZE
AR3045	#2 Diesel	35.1	500 ml
AR3046	Crude Oil	28.2	500 ml
AR3047	Reduced Crude	15.7	500 ml

## Extreme Pressure Oil Standards

ALPHA	% SULFUR	EXPANDED UNCERTAINTY	PACK SIZE
AR2851	2.00	0.03	100 ml

# Certified Reference Materials/Reference Materials

## Soils, Ores and Limestones

ALPHA	MATERIAL	% CARBON	% SULFUR	% NITROGEN	PACK SIZE
AR4005	Ore	1.38	1.44	NA	30 g
AR4006	Ore	3.75	3.82	NA	30 g
AR4007	Ore	7.27	3.26	NA	30 g
AR4020	Composite Soil	0.92	NA	NA	100 g
AR4021	Composite Soil	3.04	0.032	NA	100 g
AR4012	Limestone	11.97	0.044	NA	25 g
AR4013	Limestone	2.81	0.027	NA	25 g
AR4014	Limestone	5.87	0.029	NA	25 g
AR4022	Limestone	7	0.145	NA	25 g
AR4023	Limestone	11.7	0.22	NA	25 g
AR4024	Limestone	11.72	0.418	NA	25 g
AR4015	Soil	1.17	0.13	NA	25 g
AR4016	Soil	2.24	2.08	NA	25 g
AR4017	Soil	0.5	0.44	NA	25 g
AR4018	Soil	1.26	1.25	NA	25 g
AR4019	Soil	0.11	0.11	NA	25 g
AR4025	Soil	NA	NA	0.46	25 g
AR4026	Soil	NA	NA	1	25 g
AR4027	Soil	NA	NA	1.64	25 g
AR4028	Soil	NA	NA	2.02	25 g
AR4029	Soil	4.93	NA	NA	100 g
AEB2152	Soil	1.65	0.031	0.04	30 g
AEB2176	Soil	15.95	NA	1.3	30 g
AEB2180	Soil	0.85	NA	0.1	30 g
AEB2182	Soil	2.2	NA	0.2	30 g
AEB2184	Soil	2.3	NA	0.2	30 g
AEB2186	Soil	2.75	NA	0.3	30 g
AEB2188	Soil	5.4	NA	0.35	30 g

## Loss On Ignition Standards

ALPHA	WEIGHT	% LOI
AR4105	100 g	4.93
AR4106	100 g	9.64
AR4107	100 g	19.87
AR4108	100 g	30

## Organic Analysis

ALPHA	MATERIAL	% CARBON	% HYDROGEN	% NITROGEN	% OXYGEN	% SULFUR
AEB2003	Anthracene	94.34	5.66			
AEB2039	Diphenyl	94.46	6.54			
AEB2014	Napthalene	93.71	6.29			
AEB2040	Imidazol	52.99	5.93	41.2		
AR1053	Acetanilide	71.09	6.71	10.36	11.84	
AEB2001	Alanine	40.44	7.92	15.72	35.92	
AEB2005	Cyclodexanone-2,4 Dinitrophenylhydrazone	51.79	5.07	20.14	23	
AEB2012	1,3-Dinitrobenzene	42.87	2.4	16.66	38.07	
AEB2015	4-Nitroaniline	52.17	4.38	20.29	23.16	
AEB2016	Phenacetin	67.01	7.31	7.82	17.86	
AEB2020	8-Hydroxyquinoline	74.47	4.86	9.65	11.02	
AEB2030	Caffeine	49.48	5.19	28.85	16.48	
AR2092	EDTA	41.09	5.52	9.59	43.79	
AEB2034	3,5-Dinitrobenzoic Acid	39.64	1.9	13.2	45.25	
AEB2038	Urea	20	6.71	46.64	26.64	
AEB2041	Isatin	65.3	3.43	9.52	21.75	
AEB2004	Benzoic Acid	68.85	4.95		26.2	
AEB2031	Stearic Acid	76	12.75		11.25	
AR2021	Sucrose	42.1	6.48		51.41	
AEB2035	Cystine	29.99	5.03	11.66	26.63	26.69
AEB2036	Sulphanilamide	41.85	4.68	16.26	18.58	18.62
AEB2037	Sulphamethazine	51.78	5.07	20.12	11.49	11.52
AEB2017	Sulphamic Acid		3.11	14.43	49.44	33.02
AEB2011	Dibenzylsulphide	68.25	5.73			26.02
AEB2007	S-Benzylthiuronium Chloride	47.4	5.47	13.82		15.82
AEB2009	4-Chlorobenzoic Acid	53.7	3.22		20.44	
AEB2010	1-Chloro-2,4-Dinitrobenzene	35.58	1.49	13.83	61.6	
AEB2019	Hexachlorobenzene	25.3				
AEB2008	4-Bromobenzoic Acid	41.82	2.51		15.92	
AEB2021	2-Iodobenzoic Acid	33.9	2.03		12.9	
AEB2013	4-Fluorobenzoic Acid	60.01	3.59		22.84	
AEB2018	Trifluoroacetanilide	50.8	3.2	7.41	8.46	
AEB2022	Triphenylphosphine	82.42	5.76			

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# Certified Reference Materials/Reference Materials

## Food Analysis

ALPHA	MATERIAL	% CRUDE FAT	% CRUDE FIBER	% CARBON	% HYDROGEN	% NITROGEN	PACK SIZE
AR2016	Soy Bean	2.11	3.79	(45.24)	(5.73)	8.4	30 g
AR2017	Corn Gluten	0.78	3.7	51.54	6.67	12.02	30 g
AR2018	Alfalfa	3.1	23.1	(44.37)	(5.5)	3.52	30 g
AR2019	Wheat Flour	0.96	2.6	44.35	6.22	2.08	30 g
AR2020	Rye Flour	1.18	2.8	44.6	6.21	1.91	30 g
AR2021	Sucrose	NA	0.34	NA	NA	NA	50 g
AR2022	Soy Protein	0.5	0.34	NA	NA	NA	30 g
AR2025	Corn Meal	4.1	1.89	(45.52)	(45.52)	1.2	30 g
AR2026	Oat Meal	(5.51)	(7.97)	NA	NA	NA	30 g
AR2027	Barley Flour	2.04	4.3	(43.51)	(6.00)	1.9	30 g
AR2028	Rice Flour	0.46	(0.32)	NA	NA	NA	30 g

## Synthentic Catalyst Standards

ALPHA	% CARBON	% SULFUR	PACK SIZE
KED1022	24	12.6	100 g
KED1024	14.2	5.7	100 g



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