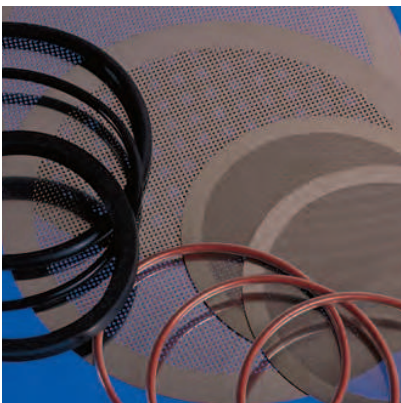


# ENVIRONMENTAL EXPRESS

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Environmental Express offers a wide selection of products designed to streamline the Toxicity Characteristic Leaching Procedure.



## TCLP Products *Heavy Duty Rotator*

### The box style of our Heavy Duty LE Rotator allows the analyst a wide choice of extraction vessels.

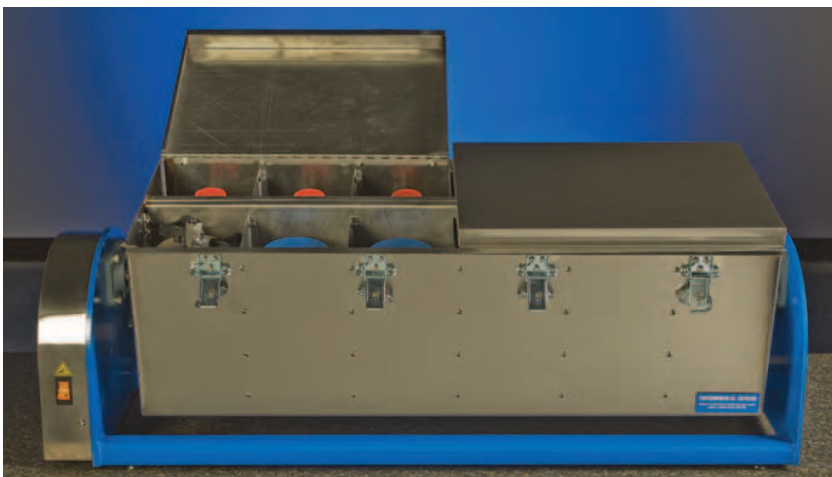
The well-designed Heavy Duty LE Rotator delivers quiet, consistent and dependable service. Large 6.25" x 6.25" x 12.75" stainless steel compartments accommodate most zero headspace extractors and many styles of glass and plastic bottles. The box style design offers a greater degree of safety than other styles of rotators.

The 12-position sample box is constructed of 14 gauge stainless steel, reinforced at all joints. The drive shaft is a full 1" in diameter to prevent any breakage, even with off-center loads. Glass bottles containing extraction fluid are shielded within the stainless steel box.

LE1002 rotators use Brother\* high efficiency gear motors with self-lubricating drive chains. Brother gear motors are designed in accordance with today's most stringent industrial standards to ensure longer service life and increased reliability. These all-helical gears are among the quietest available and have the very high surface hardness required to insure extended wear resistance commonly associated with EPA Method 1311. A self-lubricating chain prevents slippage and requires no maintenance. Precise, constant speed control is maintained during long hours of continuous operation.

Polyurethane Extractor Pads for LE Rotators are die-cut to enable various vessels to fit in the Environmental Express LE rotators. Styles are available to fit both zero-headspace analyzers and bottles.

<i>Description</i>	<i>Catalog #</i>
Twelve-place rotator	LE1002
Extractor Pad EE ZHE+	LE1603
Extractor Pad Millipore* ZHE	LE1604
Extractor Pad BC2000-1 Bottle	LE1606
Extractor Pad BX3000-4 Jar	LE1607
Extractor Pad BF2501-6 Jar	LE1608
Extractor Pad BK3000-1 Jar	LE1609



### Heavy Duty LE Rotator

#### *Maxfil Filtration Device*

### ZHE+ Zero Headspace Extractor

#### *O-Rings and Screens*

### Collection Bags

#### *Adaptor Kits and Pumps*

### Gas Tight Syringes

#### *Extraction Bottles*

### Extraction Fluid

#### *Acid Washed Filters*

## TCLP Products *Pressure Filtration*



### The PTFE-coated MaxFil\* Pressure Filtration Device is durable and lightweight.

The MaxFil is specifically designed to meet the demands of the Toxicity Characteristic Leaching Procedure Method. Design features built into this hazardous waste filtration system make complying with Method 1311 easy and efficient. No splitting of the sample extract is necessary because the 2200mL capacity allows the analyst to load the entire sample before filtration begins. This saves time and reduces the supplies necessary to prepare a sample. Pressurization is achieved by use of a quick-connect fitting instead of a cumbersome hose-barb fitting. This quick-connect requires no clamping and, unlike a barbed fitting, it cannot “blow off” during filtration. All pressures are monitored by a pressure gauge located on the top plate of the MaxFil. When used with a regulator, filtration can be performed accurately and precisely without constant attention by the analyst.

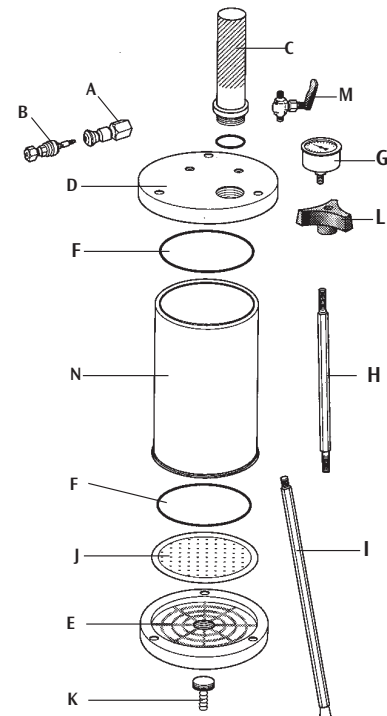
Sample materials may be introduced into the MaxFil by removing the top plate or through the 1" diameter entry port. This unique entry port has a two-inch knurled handle that enables any analyst to open and close the port without the use of tools.

All wetted surfaces of the Maxfil are PTFE\*-coated to offer extra assurance that no leaching of metals will occur.

PTFE-coated MaxFil

Catalog # PF000-2

<i>MaxFil Parts</i>	<i>Catalog #</i>
A. 1/4" female disconnect	PSSF25-1
B. 1/4" male disconnect	ZCDMD25-1
C. 1" entry port handle	PC000-1
D. Top plate	PSSTP00-1
E. Bottom plate	PSSBP00-1
F. Viton*-A cylinder O-ring	PVR000-2A
G. Pressure gauge, 0-100 psi	PSPPG12-2
H. Connecting rod	POSTR25-1
I. Leg	POSLG25-1
J. 142mm filter support screen	PSS142MM
142mm PTFE-coated filter support screen	M302004
K. Exhaust port	PEP000-1
L. Thermoplastic locking handle	ZPLNA00-3
M. 1/8" pressure relief valve	ZCDRV12-1
N. Sample barrel	PSS2200
O. Viton-A inlet O-ring	PVR100-1



## TCLP Products *Zero Headspace Extraction*

### ZHE+\* with 560mL capacity is constructed of 316 Stainless Steel.

The Environmental Express zero headspace extractor, ZHE+, is the finest device of its type. ZHE+ has a large capacity to utilize the maximum test sample of 25 grams, as allowed by federal regulations. In use, the piston is moved up the honed sample barrel by gas pressure, pushing the extracted sample through a 0.7µm borosilicate glass fiber filter, held between two photo-etched screens and out the top of the apparatus into a gas tight syringe or Tedlar\* bag. A pressure gauge continually monitors filtration pressure. Pressurizing gas is introduced through a quick-connect fitting located on the bottom of the ZHE+, allowing the user one-hand operation when connecting or disconnecting the gas source. A pressure relief valve is located on the bottom of the ZHE+. All fittings are contained within the "footprint" of the apparatus, protecting them from damage when the apparatus is handled or loaded into a rotary agitator.

The finished extract exits through a 316 stainless steel plug valve located on the top plate. A plug valve is especially well suited for this application, as it can be "throttled" to allow the pressurized extract to escape from the ZHE+ slowly. Top and bottom plates are connected by hex connecting rods and feet. The ZHE+ comes fully assembled.

The ZHE+ is supplied with a set of spare O-rings and a polyethylene tool to remove the piston from the sample cylinder.

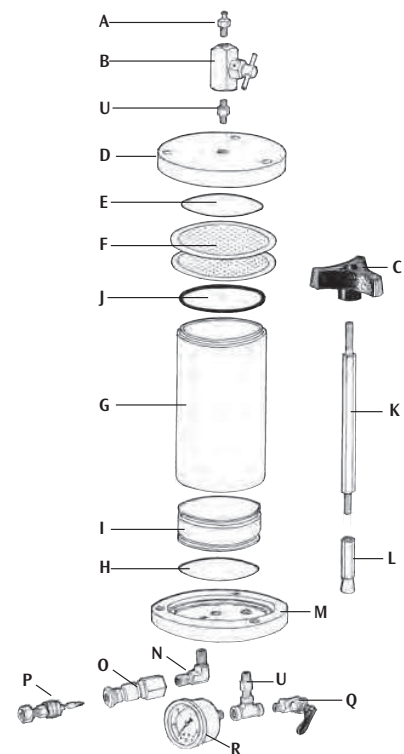
#### ZHE+

Catalog # ZHE1000

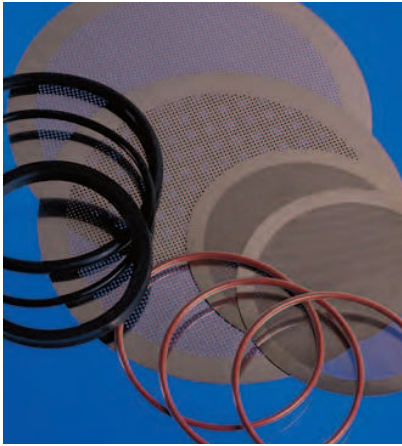


#### ZHE+ Parts:

ZHE+ Parts:	Catalog #
A. 1/8" Stainless steel luer	ZSSFL12-1
B. 1/4" Stainless plug valve	ZSSPV00-1
C. Thermoplastic locking handle	ZPLNA00-3
D. 316 Stainless top plate	ZSSTP00-1
E. Viton*-A plate O-ring	ZVRC000-2
F. 90mm photoetched SS screen	ZSS9000-1
90mm disposable PES screen	FZ090MM
G. Stainless cylinder	ZSS5600-1
H. Viton-A O-ring	ZVRP000-2
I. 316 Stainless piston	ZSSP000-1
J. Viton-A cylinder O-ring	ZVRB000-1
K. Connecting rod	ZOSTR25-1
L. Support legs	ZOSLG25-1
M. 316 Stainless bottom plate	ZSSBP00-1
N. 1/4" elbow connection	ZCDEL25-1
O. 1/4" male disconnect	ZCDMD25-1
P. 1/4" female disconnect	ZCDFD25-1
Q. 1/8" pressure relief valve	ZCDRV12-1
R. Pressure gauge, 0-60 psi	ZSPPG12-1
S. Rubber feet	ZRUFT25-3
T. Polyethylene knockout plug (not shown)	ZPYPG00-1
U. 1/8" Stainless bushing	ZSSBU12-1
V. 1/8" Stainless female Fitting	ZCDT012-1



## TCLP Products *Miscellaneous*



### O-ring Sets and Screens for ZHE+ are always in stock and always competitively priced.

O-ring sets, 316SS photo-etched screens and quality replacement parts are guaranteed to fit your zero headspace extractor. All parts are made of approved materials.

### Replacement Parts are also available for Pressure Filtration Devices.

Environmental Express is a complete source for replacement parts for pressure filtration devices. The parts listed are constructed of approved materials for TCLP testing and are guaranteed to be perfect replacements for your pressure filtration device. There's never a minimum order and these supplies are always in stock.

#### ZHE Parts and Accessories

##### Environmental Express ZHE+\* (#ZHE1000)

<i>Description</i>	<i>Catalog #</i>
90mm Filter Support Screen, 316 Stainless Steel	ZSS9000-1
O-ring set, Viton*	ZVR1000
Plate O-ring, Viton, 2/pack	ZVRC000-2
Barrel O-ring, Viton	ZVRB000-1
Piston O-ring Set, Viton	ZVRP000-2
Plug valve O-ring Set, Viton	ZVR9903

##### Millipore\* ZHE (#YT30090HW)

<i>Description</i>	<i>Catalog #</i>
90mm filter support screen, 316 stainless steel	ZSS9000-1
O-ring set, Viton	ZVR1000-M
Plate O-ring, Viton, 2/pack	ZVRC000-2
Barrel O-ring, Viton	ZVRB000-1
Piston O-ring Set, Viton	ZVRP000-3M

##### Associated Design & Manufacturing ZHE (#3745-ZHE)

<i>Description</i>	<i>Catalog #</i>
90mm filter support screen, 316 stainless steel	ZSS9000-1
O-rings, set of 6	ZVR1000-A
Plate O-ring, Viton, 3/pack	ZVRC000-3
Barrel O-ring, Viton	ZVRA000-1
Piston O-ring set, Teflon*-coated, 2/pack	ZTRP00A-2

##### Gelman\* ZHE (#15400 & 15401)

<i>Description</i>	<i>Catalog #</i>
90mm filter support screen, 316 stainless steel	ZSS9000-1
Plate O-ring, Viton, 2/pack	ZVRC000-2
Barrel O-ring, Viton	ZVRB000-1

#### Pressure Filtration Parts and Accessories

##### Environmental Express MaxFil\* (#PF000-2)

<i>Description</i>	<i>Catalog #</i>
PTFE-coated filter support Screen	PSS142MM-T
Plate O-ring, Viton (for Teflon Coated Maxfil)	PVR000-2A
Inlet O-ring, Viton	PVR100-1



## TCLP Products *Miscellaneous*

### Tedlar\* Air Bags from ESS are lot certified (TO-14).

Tedlar bags are recommended for the collection of final TCLP volatile extracts and the liquid portion of multi-phasic samples. These 7" x 7" one-liter bags are also suitable for aqueous and gaseous sample shipment and storage. Each bag comes with a disposable adaptor that allows you to attach the Tedlar Bag to your ZHE. Pack of 10 Tedlar bags with 10 adaptors and tubing.

- Low bleed Septa and metal grommet
- Easy-to-use 2-in-1 valve
- Unique seam construction for added strength
- Precleaned components
- Low permeability
- No chemical reaction with sample

#### Tedlar Bags with Adaptors

Catalog # TB7000GD



### Fluid Metering Pumps provide an easy, accurate method for transferring exact amounts of liquids into a zero headspace extractor.

Environmental Express offers a variety of pumps and appropriate Teflon fittings suitable for numerous applications. Fittings for individual needs are readily available on a special order basis. Pumps listed use 115VAC.

#### Pumps

Description	Pump Rate	Catalog #
PTFE & Stainless Steel	50-1000mL/min	TP1100
Ceramic & Ryton*	0-122 mL/minute	TP1200

#### Adaptor Kits for Pumps

These pre-assembled adaptor kits provide the correct tubing and fittings to connect the metering pumps to a zero headspace extractor and an extraction fluid reservoir. Kits consist of two 24" sections of PTFE tubing and fittings manufactured from PTFE and/or 316 stainless steel.

#### Adaptor Kits

Description	Catalog #
Adaptor Kit for Pump TP1100	TP1118M
Adaptor Kit for Pump TP1200	TP1218M

### Gas-tight Syringes minimize loss of volatile constituents in TCLP samples.

Our TCLP gas-tight syringes use a unique locking valve that allows sample extract to be drawn directly out of the zero headspace device and stored in zero headspace condition until injected into a GC/GCMS or a purge and trap. These reusable TCLP syringes have wetted surfaces of borosilicate glass, PTFE and/or 316SS. Available in 5mL, 10mL, 25mL, 50mL, and 100mL sizes.

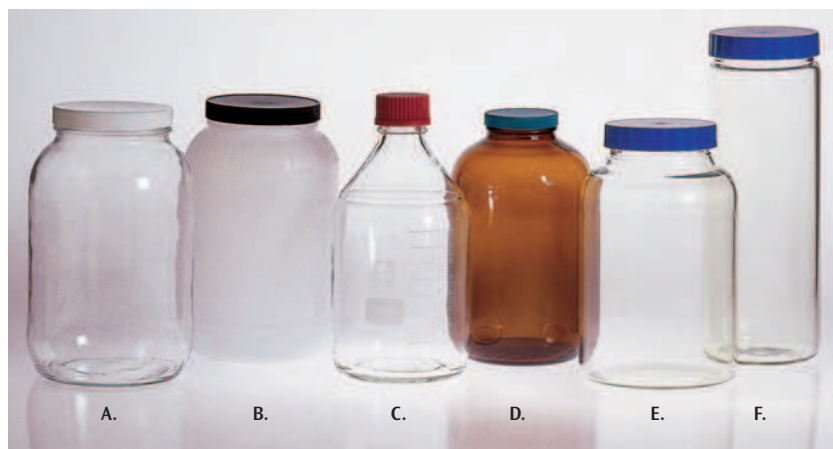
Syringes w/Locking Valve	Catalog #
5mL Graduated TCLP Syringe	S1005
10mL Graduated TCLP Syringe	S1010
25mL Graduated TCLP Syringe	S1025
50mL Graduated TCLP Syringe	S1050
100mL Graduated TCLP Syringe	S1100



## TCLP Products *Miscellaneous*

Extraction Bottles are available for commercial and homemade rotary extractors.

All bottles listed, except BX3000-4 and BF3000-4, have PTFE-lined caps. Bottle collars or pads are necessary for most bottles to properly and safely fit in rotary agitators.



Material	Capacity	Size (DXH)	Mouth Opening	Safety Coated	For Extractor**	Catalog #
A. Flint Glass	3000mL	15cm x 26cm	95mm	no	EE	BF3000-4
B. Polyethylene	3000mL	15cm x 24cm	100mm	—	EE, LL	BX3000-4
C. Borosilicate	2200mL	14cm x 26cm	30mm	no	EE, LL	BC2000-1
D. Flint Glass, Amber	2500mL	14cm x 24cm	60mm	no	EE, LL	BF2501-4
E. Borosilicate	3000mL	15cm x 26cm	90mm	yes	EE	BK3000-1
F. Borosilicate	2200mL	11cm x 32cm	90mm	yes	ADM, AN	BP2000-1

\*\*EE=Environmental Express, LL=Lars Lande, ADM= Associated Design & Manufacturing, AN=Analytical Testing.



TCLP Extraction Fluid Concentrates deliver the exact amount of reagents and proper pH for either one or two liter extractions.

Both extraction fluid #1 and extraction fluid #2 are supplied in screw-top vials. Simply add them to the appropriate volume of laboratory water. In addition to unit packaged reagents, we offer extraction fluid #1 in bulk concentrate form. Supplied in five, 200mL bottles this concentrate is diluted with laboratory grade water to 50 liters. Individual bottles may be diluted to 10 liters if a smaller quantity is needed. Both styles of fluid are supplied with MSDS and certificate of analysis.

Description	Catalog #
Fluid #1 for two liter extraction, pH 4.93±0.05	E1002
Fluid #2 for two liter extraction, pH 2.88±0.05	E2002
50 liter Fluid #1 concentrate 5 x 200mL Bottles pH 4.93± 0.05	HP-P100

## TCLP Products *Filters*



ENVIRONMENTAL EXPRESS		
Certificate of Preparation and Analysis		
Acid Washed TCLP Filters	Lot #	3241001W
These filters are composed of binder free borosilicate glass fiber with a nominal particle retention of 0.7µm. Filters have been acid washed and prepared for TCLP extraction according to EPA Method 1311 guidelines. Filters have been washed in 1N HNO <sub>3</sub> solution and rinsed three times with deionized water.		
Analyte	Blank Field	Filtered Field
Arsenic	<0.005mg/L	<0.005mg/L
Bismuth	<0.005mg/L	<0.005mg/L
Cadmium	<0.005mg/L	<0.005mg/L
Chromium	<0.005mg/L	<0.005mg/L
Lead	<0.005mg/L	<0.005mg/L
Mercury	<0.02mg/L	<0.02mg/L
Silver	<0.01mg/L	<0.01mg/L
Selenium	<0.005mg/L	<0.005mg/L
<small>           100mL of TCLP extractor fluid number 1 was filtered through an acid washed 142mm glass fiber filter. The resulting filtered extract was analyzed for the above metals by EPA methods 8005 and 8020. Filtered extract was analyzed for mercury by EPA method 16310.            Note: The above analyses were conducted on TCLP extracts, not on the filters themselves. Dispersion and analysis of the filter characteristics would result in significantly different results.         </small>		
<small>           23454 Charleston Regional Parkway, Charleston, SC 29402            Phone: 843.321.5550 Toll Free: 800.343.5379 FAX: 843.881.2574 Web: www.environmentalexpress.com         </small>		

*Each box of prewashed TCLP filters is supplied with an independent certification of preparation, warranting that the filters were prepared by Method 1311 protocols. The certificate also gives demonstrated background TCLP metals levels.*

### 0.7µm Acid Washed TCLP Filters from Environmental Express meet all guidelines set forth in EPA Method 1311.

The use of prewashed filters saves reagent cost and reduces chemical waste in your laboratory. Filters are washed, rinsed and dried in a consistent procedure which may reduce blank variability and typically provides lower background metals levels than are achieved with on-site filter preparation. These filters are washed in 1N HNO<sub>3</sub> acid and then rinsed three times with more than one liter of deionized water per filter. The filters are oven dried at 105°C prior to final conversion.

#### Acid Washed TCLP Filters

Description	Catalog #
Prewashed 47mm, 0.7µm	FG77047MM
Prewashed 76mm, 0.7µm	FG77076MM
Prewashed 90mm, 0.7µm	FG77090MM
Prewashed 110mm, 0.7µm	FG77110MM
Prewashed 125mm, 0.7µm	FG77125MM
Prewashed 142mm, 0.7µm	FG77142MM
Prewashed 150mm, 0.7µm	FG77150MM

#### Standard TCLP Filters

Description	Catalog #
Standard 47mm, 0.7µm	FG75047MM
Standard 76mm, 0.7µm	FG75076MM
Standard 90mm, 0.7µm	FG75090MM
Standard 110mm, 0.7µm	FG75110MM
Standard 125mm, 0.7µm	FG75125MM
Standard 142mm, 0.7µm	FG75142MM
Standard 150mm, 0.7µm	FG75150MM

**Our Standard TCLP Filters exhibit a 98% particle retention rate.**

TCLP extracts must be filtered through binder-free, borosilicate glass fiber filters, with porosity limits of 0.7µm ± 0.1µm. At that particle size, Environmental Express filters exhibit a 98% particle retention rate. They are tested for wet burst strength and flow rate.