

# Products for Chemical Resistance



**WESTLAKE**  
**PLASTICS COMPANY**

## Material Descriptions

### **KYNAR®**



### **PVDF (polyvinylidene fluoride)**

Manufactured from Kynar® polyvinylidene fluoride resin. This material offers excellent corrosion and chemical resistance at both ambient and elevated temperatures. PVDF is also inherently UV stable, mechanically tough, abrasion and flame resistant. Kynar 1000 is a whiter grade of PVDF than 740.

### **HALAR™**



### **ECTFE (ethylene-chlorotrifluoroethylene)**

Made from HALAR® ethylene-chlorotrifluoroethylene resin, these products are virtually unaffected by most common corrosive chemicals. ECTFE products have excellent chemical and mechanical properties, impact strength, and a broad service use temperature. This polymer offers extremely low permeability to liquids, gases, and vapors.

### **PROPYLUX®**



### **(polypropylene)**

Propylux is made from polypropylene resin. Among its most notable characteristics are its mechanical toughness, chemical resistance, and resistance to abrasion. These properties make it suitable for various applications. Propylux Natural, Void Free, and 944 are FDA compliant.

### **ULTRA ETHYLUX®**



### **HDPE (high density polyethylene)**

Ultra Ethylux is made from high density polyethylene resin. This material is a cost effective alternative for a variety of end uses including mild chemical and wear applications.

# Westlake Products for Chemical Resistance—Properties

Property	Units	ASTM Test	Kynar® 740/1000	Kynar® 2850	Halar® 901	Propylux®	Ultra Ethylux®
			PVDF Homopolymer	PVDF Copolymer	ECTFE	Polypropylene	HDPE
<b>MECHANICAL</b>							
Tensile Strength @yield	psi	D638	7,000	5,000	4,300	5,200	4,000
Tensile Modulus	psi	D638	250,000	125,000	240,000	240,000	136,000
Tensile Elongation @break	%	D638	100	350	250	600	>700
Flexural Strength @yield	psi	D790	8,000	3,500	6,800	7,000	–
Flexural Modulus	psi	D790	290,000	170,000	245,000	230,000	170,000
Izod Impact Strength–notched	ft•lbs/in	D256	3	8	No break	0.7	3.2-4.5
Continuous Use Temperature	° F	–	280	240	300	180	310
Melt Temperature	° F	D4591	335	315	465	330	260
<b>THERMAL</b>							
Heat Deflection Temperature @264 psi	° F	D648	230	125	145	130	–
Flammability Rating–UL94	–	–	V-0	V-0	V-0	HB	HB
Coefficient of Thermal Expansion	in/in/° F	D696	6.5x10 <sup>-5</sup>	7.8x10 <sup>-5</sup>	5.6x10 <sup>-5</sup>	8.1x10 <sup>-5</sup>	7-11x10 <sup>-5</sup>
Limiting Oxygen Index (LOI)	%	D2863	43	42	56	–	–
<b>ELECTRICAL</b>							
Dielectric Strength (1/8" thickness)	V/mil	D149	260	270	350	600	475
Dielectric Constant @1KHz	–	D150	8.5	7.5	2.5	2.3	2.3
<b>OTHER</b>							
Specific Gravity	–	D792	1.78	1.78	1.68	0.91	0.95
Water Absorption @24 hours	%	D570	0.03	0.04	<0.1	<0.10	0.03

## Kynar® 740/1000

### Key Properties

- High purity
- Flame resistant
- Easy to machine
- Excellent weatherability
- FDA, USDA, USPXX Class VI, 3A, UL V-0, FM4910, UL2360 (Class I for 1000, Class II for 740)

### Applications

- Fluid handling
- Semiconductor equipment
- Fire safe componentry

## Kynar® 2850

### Key Properties

- High purity
- Flame resistant
- Stress crack resistant
- Excellent weatherability
- FDA, USDA, USPXX Class VI, UL V-0, FM4910

### Applications

- Fluid handling
- Semiconductor equipment
- Fire safe componentry

## Halar® 901

### Key Properties

- High purity
- Flame resistant
- Impact resistant
- Excellent weatherability
- Low permeability
- FDA, USDA, UL V-0

### Applications

- Fluid handling
- Semiconductor equipment
- Fire safe componentry

## Propylux®

### Key Properties

- Inexpensive chemical resistant material
- Dimensionally stable
- Toughness
- Weldability
- FDA, USDA

### Applications

- Chemical etching tanks
- Equipment cabinetry
- Cutting Boards

## Ultra Ethylux®

### Key Properties

- Good corrosion resistance
- High stress cracking resistance
- Low moisture absorption
- Good tensile strength and stiffness
- FDA

### Applications

- Food processing equipment
- Cutting boards
- CPI, fluid handling
- Wear applications

## The Company

Westlake Plastics Company is the world leader in extrusion and compression molding technologies of high performance thermoplastics. Our advanced technologies allow us to convert the full range of thermoplastic resins into stock shapes and film.

New product development is the hallmark of Westlake Plastics. Our six business groups (Chemical Resistance, Engineering, Film, High Performance, Medical and Static Control) work in close conjunction with resin suppliers and end users to develop new products that meet the critical needs of customer applications as well as industry specific standards.

Our field and in-house technical experts provide you with excellent resources for product application and recommendations. Our industry focused expertise includes:

- **Analytical Instrumentation**
- **Automotive**
- **Aviation and Aerospace**
- **Chemical Processing**
- **Computer**
- **Electrical/Electronics**
- **Food Handling**
- **Medical**
- **Nuclear Energy**
- **Pharmaceutical**
- **Semiconductor**
- **Telecommunications**

In addition to our knowledge on specific industries, Westlake also offers over 40 years of manufacturing experience. With both compression molding and extrusion technologies, we are able to offer small runs of customized products with short turn around times as well as generous samples.

If it's product or application knowledge you seek, Westlake is ready to respond to your challenges.

## Other Westlake Products

Many of our standard products are also available in different grades including: FDA compliant, fire retardant and glass fiber reinforced.

### Made from:

- **Engineering and Mechanical Resins**
  - Acetal Copolymer (ULTRAFORM<sup>®</sup>, CELCON<sup>®</sup>)
  - Acrylonitrile-Butadiene-Styrene (CYCOLAC<sup>®</sup>)
  - Modified Polyphenylene Oxide (NORYL<sup>®</sup>)
  - Polycarbonate (LEXAN<sup>®</sup>, MAKROLON<sup>®</sup>)
  - Low-Density Polyethylene
  - High-Density Polyethylene
  - Ultra-High Molecular Weight Polyethylene
  - Polymethylpentene
  - Polypropylene
  - Crystal Polystyrene (STYRON<sup>®</sup>)
  - High Impact Polystyrene (STYRON<sup>®</sup>)
- **Fluoropolymer Resins**
  - Ethylene-Chlorotrifluoroethylene (HALAR<sup>®</sup>)
  - Ethylene-Tetrafluoroethylene (TEFZEL<sup>®</sup>)
  - Polyvinylidene Fluoride (KYNAR<sup>®</sup>)
  - TFE/PVDF/HFP Terpolymer
- **High Performance Resins**
  - Polyetheretherketone (VICTREX<sup>®</sup>)
  - Polyethersulfone (RADEL<sup>®</sup>A, ULTRASON<sup>®</sup>E)
  - Polyetherimide (Utem<sup>®</sup>)
  - Polysulfone (UDEL<sup>®</sup>)
  - Polyphenylsulfone (RADEL<sup>®</sup>R)

### Westlake Product

Pomalux<sup>®</sup>  
Absylux<sup>®</sup>  
Norylux<sup>™</sup>  
Zelux<sup>®</sup>  
Ethylux<sup>®</sup>  
Ultra Ethylux<sup>®</sup>  
Lennite<sup>®</sup>  
TPX<sup>®</sup>  
Propylux<sup>®</sup>  
Styraclear<sup>®</sup>  
HIPS  
  
ECTFE  
ETFE  
PVDF  
Clariflex<sup>™</sup>  
  
PEEK  
PES  
Tempalux<sup>®</sup>  
Thermalux<sup>®</sup>  
PPSU

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### Trade Names:

ABSYLUX<sup>®</sup> – Westlake Plastics Co.  
CELCON<sup>®</sup> – Ticona  
CYCOLAC<sup>®</sup> – GE Plastics  
CLARIFLEX<sup>™</sup> – Westlake Plastics Co.  
ETHYLUX<sup>®</sup> – Westlake Plastics Co.  
HALAR<sup>®</sup> – Ausimont USA, Inc.  
KYNAR<sup>®</sup> – Elf Atochem North America, Inc.  
LENNITE<sup>®</sup> – Westlake Plastics Co.  
LEXAN<sup>®</sup> – GE Plastics  
MAKROLON<sup>®</sup> – Mobay

NORYL<sup>®</sup> – GE Plastics  
NORYLUX<sup>™</sup> – Westlake Plastics Co.  
POMALUX<sup>®</sup> – Westlake Plastics Co.  
PROPYLUX<sup>®</sup> – Westlake Plastics Co.  
RADEL<sup>®</sup> – Amoco Performance Products, Inc.  
STANYL<sup>®</sup> – DSM Engineering Plastics  
STYRACLEAR<sup>®</sup> – Westlake Plastics Co.  
STYRON<sup>®</sup> – Dow U.S.A.  
TEFZEL<sup>®</sup> – Du Pont Co.  
TEMPALUX<sup>®</sup> – Westlake Plastics Co.

THERMALUX<sup>®</sup> – Westlake Plastics Co.  
TPX<sup>®</sup> – Mitsui Plastics, Inc.  
UDEL<sup>®</sup> – Amoco Performance Products, Inc.  
ULTEM<sup>®</sup> – GE Plastics  
ULTRAFORM<sup>®</sup> – BASF Corp.  
ULTRA ETHYLUX<sup>®</sup> – Westlake Plastics Co.  
ULTRASON<sup>®</sup> – BASF Corp.  
VICTREX<sup>®</sup> – Victrex, Inc.  
WESTLAKE<sup>®</sup> – Westlake Plastics Co.  
ZELUX<sup>®</sup> – Westlake Plastics Co.

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