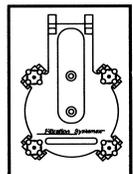


# Halar® Lined Housings and Coated Accessories



**Filtration Systems™**

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## WHY USE FILTRATION SYSTEMS™ HALAR LINED HOUSINGS?

- Offers a **broad range of chemical resistance properties**, which are useful when filtering liquids that are incompatible with stainless or carbon steel
- Assures a **seamless filtering environment**, ideal for high-purity applications
- Provides a **safe alternative to plastic housings**, allowing wider parameters of pressure and temperature ratings for liquid filtration
- Resists peeling and is **extremely durable**

**Filtration Systems** individual vessels are specially prepared to receive the HALAR fluoropolymer coating. Lined housings are sanitary design with interior polished finish, and have flanged connections. Multiple coats of HALAR are electrostatically applied to the internal wetted surfaces of our housings, as well as most baskets and accessories, and then baked in a controlled, high temperature oven for curing.

Since we manufacture our filter vessels in-house, **Filtration Systems** is able to provide consistent, reliable products, fabricated to tight tolerances in a controlled environment. HALAR lined housings meet our strict criteria, including visual inspection and high-voltage, spark testing. Our Certificate of Warranty assures complete coating of HALAR on all internal, wetted surfaces of the filter vessel. For an additional charge, the exterior of the housing may be dusted with overspray to provide environmental or spill protection.



HALAR lined vessels feature flanged connections.



**Filtration Systems HALAR lined housings are ideal for demanding liquid filtration applications.**

## WHAT IS HALAR FLUOROPOLYMER?

HALAR, one of the most chemically resistant fluoropolymers, is a melt process thermoplastic manufactured by Ausimont USA, Inc. Due to its chemical structure, a 1:1 alternating copolymer of ethylene and chlorotrifluoroethylene, HALAR (ECTFE) offers a unique combination of useful properties.

**Filtration Systems** HALAR fluoropolymer lined housings are ideal for demanding liquid filtration applications. They provide excellent chemical and abrasion resistance with a broad-use temperature range. HALAR does not contaminate high-purity fluids and is virtually unaffected by most corrosive chemicals commonly encountered in industry, including strong mineral and oxidizing acids, alkalies, metal etchants, liquid oxygen, and some organic solvents.

## KEY PROPERTIES OF HALAR FLUOROPOLYMER

### THERMAL PROPERTIES

The continuous thermal rating for HALAR fluoropolymer is 250°F. As with all powder coatings, HALAR should not be subjected to pressurized steam.

### CHEMICAL RESISTANCE

HALAR fluoropolymer resists a wide variety of corrosive chemicals and organic solvents, including strong acids, chlorine, and aqueous caustics.

### SURFACE CHARACTERISTICS

The excellent performance of HALAR fluoropolymer is due, in part, to its smooth, seamless surface.

### TOUGHNESS AND STRENGTH

HALAR fluoropolymer possesses superior mechanical properties over a wide range of temperatures. It has "nylon-like" durability and provides excellent impact resistance at ambient and subambient temperatures.

### WATER ABSORPTION

Less than 0.1 %

### FOOD PROCESSING

HALAR fluoropolymer complies with the FDA's Register of Food Additive Regulations, Sec/21 CFR 177.1380, and is suitable for repeated use applications at temperatures up to 200°F in contact with non-fatty foods. HALAR is particularly suited for use with acidic food, fruit, and juice processing.



HALAR Lined Accessories

## CHEMICAL RESISTANCE TO HALAR FLUOROPOLYMER

The following *Partial List* combines:

- Laboratory results under controlled conditions with known pure reagents
- Field experience where the major chemical and the conditions are known
- Reasonable extrapolation of the above, based upon technical knowledge and an understanding of how the chemicals should react with HALAR fluoropolymer

**ACIDS** / Acetic Acid / Glacial Acetic Acid / Hydrofluoric Acid / Phosphoric Acid • **HALOGENS** / Bromine • **INORGANIC BASES** / Sodium Hydroxide / Ammonium Hydroxide • **INORGANIC SALTS** / Ferric Chloride / Zinc Chloride / Cupric Chloride • **MINERAL ACIDS**<sup>1</sup> / Sulfuric Acid / Hydrochloric Acid / Chlorosulfonic Acid • **OXIDIZING ACIDS**<sup>1</sup> / Nitric Acid / Chromic Acid / Aqua Regia • **SOLVENTS** / Hexane / Isooctane • **PLATING SOLUTIONS**

### FACTORS AFFECTING CHEMICAL RESISTANCE OF HALAR

Chemical attack and chemical resistance are very complex phenomena. Since chemical attack is a function of concentration, systems containing a lower concentration of a given solvent would be expected to show a lesser effect than might be indicated in the Ausimont Chemical Resistance Guide. Factors affecting chemical suitability of HALAR fluoropolymer, or any other plastic for liquid filtration, are as follows<sup>2</sup>:

- Specific chemical or mixture composition
- Temperature and temperature variation
- Concentration of the attacking chemical, which, in a complex form, may be different from the individual components
- Exothermic Reaction (heat of reaction of mixing)
- Pressure, due primarily to the effect of pressure on the concentration of a liquid
- Duration (Time) of exposure
- Stress levels
- Suspended solids

<sup>1</sup> HALAR fluoropolymer contains a processing aid, which will darken upon long exposure to higher concentrations of certain acids (e.g. sulfuric and nitric), but this should not affect its performance in any way.

<sup>2</sup> Although HALAR fluoropolymer can become slightly plasticized by contact with certain halogenated solvents, this effect does not normally impair its usefulness. After contact ceases and the part is allowed to dry, the mechanical properties return to their original value, indicating that no chemical attack has occurred.

## HOW TO DETERMINE SUITABILITY OF HALAR LINED HOUSINGS FOR YOUR APPLICATION

- Identify, as accurately as possible, the chemicals in the fluid stream being filtered.
- Determine the maximum and normal operating temperatures.
- Refer to Ausimont's Chemical Resistance Guide. If all of the chemicals in the fluid are listed and recommended under the temperatures involved, the application appears feasible. If any of the conditions exceed the guidelines, the application should be considered marginal, at best. The table cannot predict the effect of synergism, or the reaction of complex formation with mixtures. In any case, appropriate chemical resistance tests using a representative sample of the liquid stream should be performed.
- **Filtration Systems** will provide, at no charge, a "HALAR Test Coupon", a concave sample dish capable of holding a small amount of the test liquid for evaluation.



## GENERAL NOTES

- 1) Spark Test Certification, assuring complete coating of HALAR on the interior, wetted surfaces of our housings, is the only warranty on the HALAR lining. HALAR fluoropolymer Certificate of Warranty will accompany the invoice. Baskets and accessories are considered "wear-items" and may require periodic replacement. Mesh or lined baskets cannot be effectively coated with HALAR.
- 2) HALAR lined vessels may not have threaded connections. Subsequently, all threaded features such as vent, gauge, and drain ports are eliminated from these housings.
- 3) To assure proper sealing, O-Ring grooves are relocated from the lid to the body of the housing. Elastomeric O-Rings are recommended for optimum sealing.
- 4) HALAR fluoropolymer lined housings are specially wrapped, boxed, and strapped to a pallet for shipment via common carrier only. These vessels may not be shipped by UPS/RPS.
- 5) Information regarding HALAR fluoropolymer resistance to specific chemicals, from Ausimont's Chemical Resistance Guide, will be faxed upon request, without recommendation of suitability for a specific purpose. All statements and data provided by Ausimont USA, Inc. herein are believed to be accurate and reliable, but are presented without representation, guarantee, or warranty, express or implied.

**WARNING: Improper use of pressurized filter vessels may result in injury or property damage. Any misuse or modification to our products will void both the manufacturer's warranty, as well as the ASME certification of ASME Code vessels. Safety information does not by itself eliminate any danger. Information or warnings are not a substitute for proper accident prevention measures.**

### Safety Information

The user should assure that all safety measures are employed when handling any potentially dangerous liquid stream. If a liquid filter bag has been used with a hazardous liquid it may contain residual amounts of this material and should be handled with the same safeguards that would be used in handling any hazardous and/or toxic materials (e.g. gloves, respirators, protective eyewear, etc.). Filter bags used for such applications should be disposed of in accordance with federal, state, and/or local laws or requirements.

### Lethal Service

**Filtration Systems** vessels are not designed for lethal service. "Lethal Service" refers to vessels containing lethal substances, poisonous gases or liquids of such a nature that a very small amount of the gas or vapor of the liquid (mixed or unmixed) is dangerous to life when inhaled. In addition, substances of this nature that are stored under pressure, or may generate pressure if stored in a closed vessel, are considered lethal.

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**Warranty:** Filtration Systems warrants our products to be free from defects in workmanship for a period of one year from the date of purchase, when used in accordance with our specific guidelines. Our only obligation and a customer's remedy, subject to our inspection and evaluation, shall be to replace the product or refund the purchase price.

**Limitation of Liability:** Filtration Systems shall not be held responsible or liable for any loss resulting from the resale, direct or indirect use of this product.

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