MILLIPORE

BEVERAGE

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# Polygard® Trap Filters

## *High-efficiency prefilter cartridges for removal of diatomaceous earth from beer*

- *98% retention of hard particles over 2 µm*
- *>99.99% retention of hard particles over 5 µm*
- *Dual zone structure for extended useful life*
- *No backwash required*
- *Certificate of Compliance in each box*

DATA SHEET

For 45 years, Millipore has assisted beverage companies throughout the world with perfecting manufacturing operations and developing microbial management concepts for monitoring and removing microorganisms. Taking from this experience, we have developed the Polygard Trap Filters for removal of diatomaceous earth to ensure that you make the most of your manufacturing process. The graded density depth polypropylene Polygard Trap Filters have broad chemical (NaOH) properties, thermal compatibility and specific construction which makes them ideally suited to retain diatomite particles and PVPP fines. These cartridges provide high particle retention and offer a long lifetime. Unlike pleated pre-filter structures, the Polygard Trap Filters ensure long resistance to bleed-through.

Trap filtration is a necessary step to retain diatomite particles and PVPP fines after the diatomite filter clarification and PVPP stabilization. Particulate and microbiological purity are essential to the consistency and the quality of the beer. Filtration brings safety and reliability to the process steps. The Polygard Trap Filter is an ideal high capacity prefilter used in the brewing process.

### Application Characteristics

Trap filtration requirements include retention of practically all particles larger than 2 – 5 µm size, resistance to rough pressure changes and aggressive cleaning, long useful life without bleeding and acceptable pressure drop at operating flow rates.

# Use Polygard Trap Filters in Your Filtration of Cold Beer

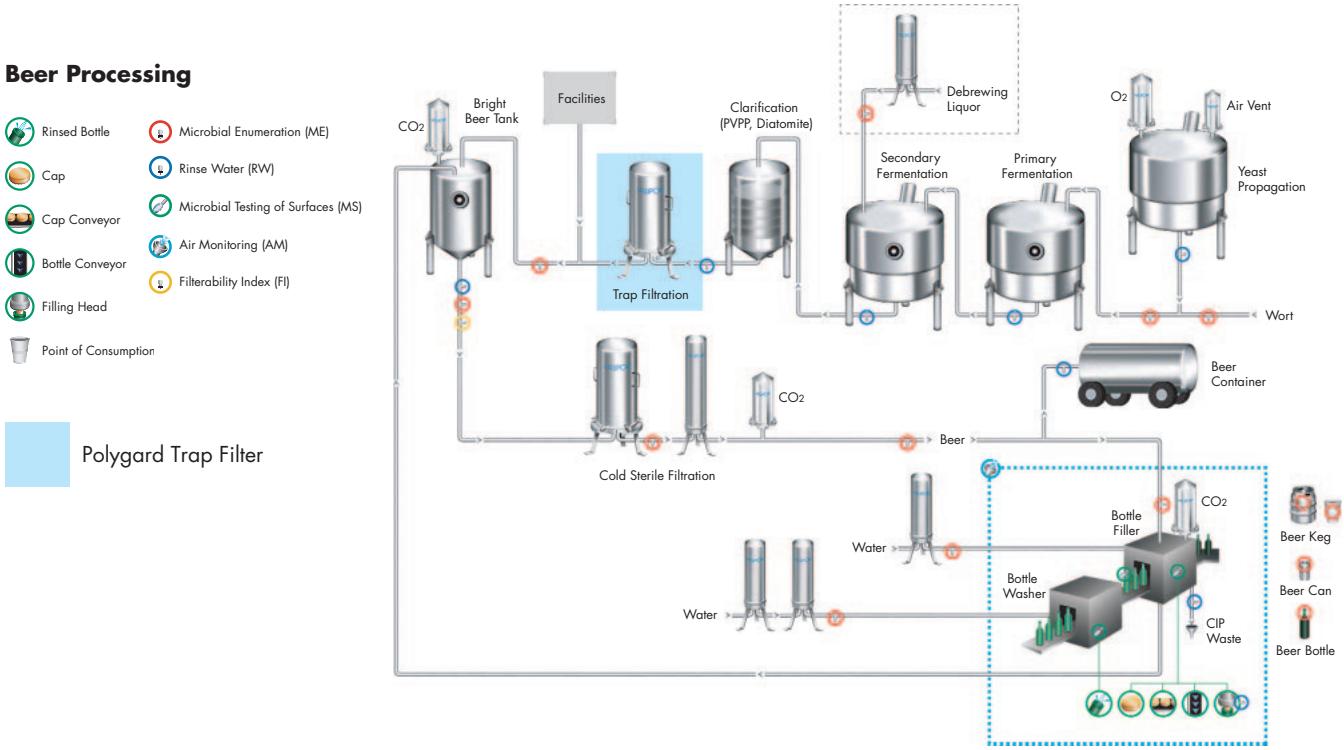



**Figure 1.** *During beer processing, the Polygard Trap Filters are used as prefilters to remove diatomaceous earth from beer and protect the final filter to ensure long filter life.*

# Polygard Trap Filters

## Retention vs. Particle Distribution to be Removed

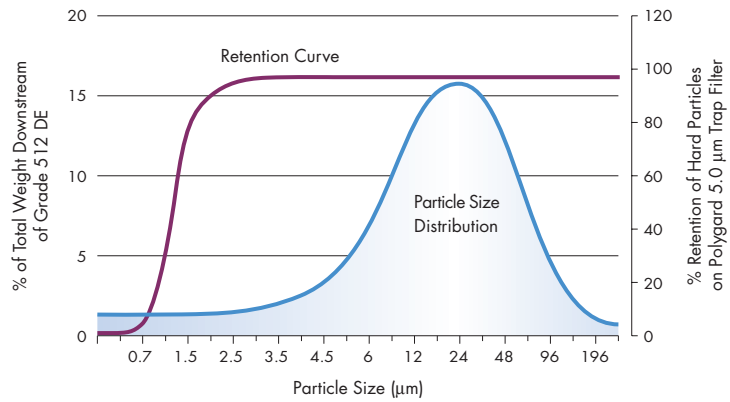



**Figure 2.** *Polygard Trap Filters have the necessary retention capability to remove diatomite particles and PVPP fines.*

## Flow and Pressure Drop Corrections for Filtration of Cold Beer

1. Calculate **FF10**:

   FF10 = filtration flow rate (L/min) per 10-inch length of cartridge

2. Correct for temperature using the correction table below. Multiply FF10 by the flow correction factor (**F**), e.g.,

   FF10 at 4 °C = FF10 at 25 °C x 1.751

3. Read the pressure drop (**PD**) on the flow diagram below:
   (Note: the increase in pressure drop is the result of the increase in vicosity due to lower water temperature.)

   FF10 at 4 °C = PD at 4 °C water

4. Correct for the viscosity of beer. The relative viscosity of beer to water at 4 °C is 1.6:

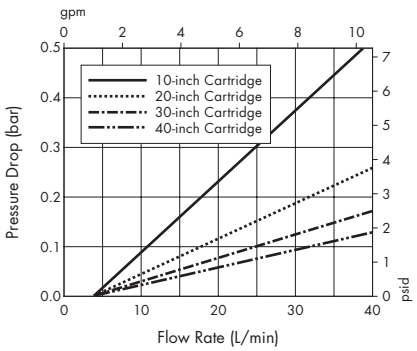
   PD at 4 °C for beer = PD at 4 °C water x 1.6

## Normalized Water Permeability Temperature Correction Factor (F)

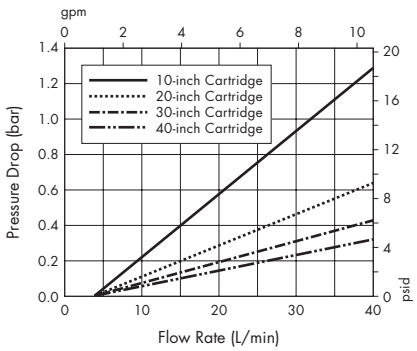
| T (°F) | T (°C) | F | T (°F) | T (°C) | F |
|---|---|---|---|---|---|
| 50.0 | 10 | 1.463 | 41.0 | 5 | 1.699 |
| 48.2 | 9 | 1.506 | 39.2 | 4 | 1.751 |
| 46.4 | 8 | 1.551 | 37.4 | 3 | 1.801 |
| 44.6 | 7 | 1.598 | 35.6 | 2 | 1.851 |
| 42.8 | 6 | 1.648 | | | |

## Typical Flow Rate vs. Differential Pressure

Typical Water Flow vs. Differential Pressure at 25 °C




Typical Beer Flow vs. Differential Pressure Corrected for Viscosity and Temperature at 4 °C



## Specifications

| | Per 10-inch Cartridge<br>Code 7 | Code F |
|---|---|---|
| **Nominal Dimensions** | | |
| *Diameter:* | 70 mm (2.75 in.) | 63.5 mm (2.5 in.) |
| *Overall length:* | | |
| *10-inch cartridge:* | 326 mm (12.8 in.) | 253 mm (10.0 in.) including gasket |
| *20-inch cartridge:* | 576 mm (22.7 in.) | 503 mm (19.8 in.) including gasket |
| *30-inch cartridge:* | 830 mm (32.7 in.) | 754 mm (29.7 in.) including gasket |
| *40-inch cartridge:* | 1093 mm (43.0 in.) | 1020 mm (40.2 in.) incl. gasket |
| **Micron Retention Grade (Pore Size)** | 5.0 µm | |
| **Materials of Construction** | | |
| *Filter media:* | Polypropylene | |
| *Structural components:* | Polypropylene | |
| *O-rings (Code 7):* | Silicone | |
| *Gasket (Code F):* | Polyethylene | |
| **Maximum Differential Pressure** | 4.8 bar (70 psid) at 20 °C (68 °F) | |
| **Maximum Operating Temperature** | 80 °C (176 °F) | |
| **Sterilization, Steam or Autoclave** | 121 °C, 5 cycles of 30 minutes (excluding Code F) | |
| **Hot Water Sanitization** | 80 °C water, 5 cycles of 30 minutes | |
| **Indirect Food Additive** | All component materials meet the FDA Indirect Food Additive requirements cited in 21 CFR 177 – 182. | |

## Certificate of Compliance

Each Polygard Trap Filter package contains a Certificate of Compliance for documentation accuracy. This document certifies that the component materials meet FDA Indirect Food Additive requirements cited in 21 CFR 177 –182 and that product was designed and manufactured to stringent specifications assuring its suitability for demanding beverage filtration applications.

## Ordering Information

| C | R | W | 5 | | | 0 | 0 | 6 |
|---|---|---|---|---|---|---|---|---|

**Cartridge Filter**

**Filter Type**
Polygard graded density polypropylene wrapped/wound depth filter

Pore Size
5 = 5.0 µm

Cartridge Code
7 = Code 7 (2-226) O-ring with locking tab and spear
F = Code F Double open-end flat gasket

**Cartridge Length**
1 = 10-inch
2 = 20-inch
3 = 30-inch
4 = 40-inch

**O-ring Material**
0 = Silicone (std for Code 7), polyethylene (std for Code F)

**Quantity per Package**
06 = 6/pk

### Example

A 10-inch Polygard Trap Filter cartridge with 5.0 µm media and a code 7 silicone O-ring in a package of 6 would be identified as CRW 5710 06.

## To Place an Order or Receive Technical Assistance

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CRW571006
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CRW573006
CRW574006
CRW5F1006
CRW5F2006
CRW5F3006
CRW5F4006