

Gusmer Enterprises' newly developed range of filter sheet media, the Crystalline Silica Free (CSF) filter series, has been designed and formulated to be free of crystalline silica\* yet offer the same outstanding performance of conventional filter sheet media. Gusmer's CSF gradient density filter sheets are a composite of the finest cellulose pulps and crystalline silica free filter aids. Produced with a controlled porosity, the CSF filter sheets have superior throughput capacity and excellent retention capabilities. The CSF series can be relied on to remove micron and sub-micron particulate, such as gross solids, haze constituents, yeast, bacteria and colloids on a consistent basis, yet preserves color, aromas and flavors in beverages and other various liquids.

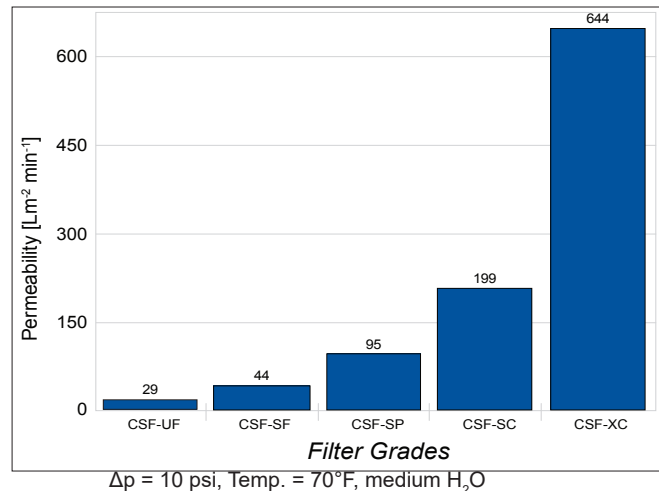
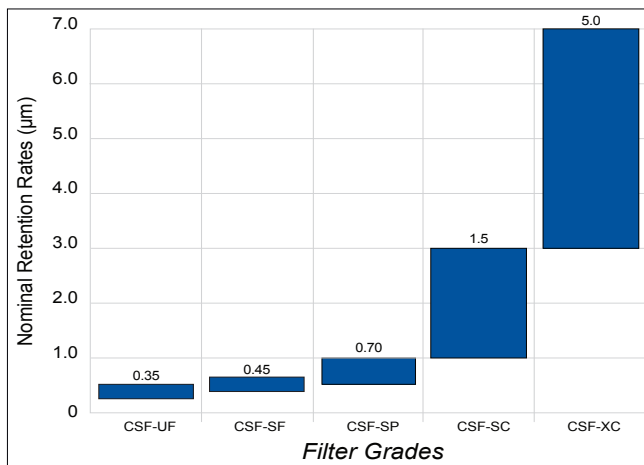
### Application Guide

The information in this Application Guide is provided as a recommendation.

Filtration Type	Filter Grades	Possible Applications	Recommended Flow Rates gal/hr/ft <sup>2</sup> (liter/hr/m <sup>2</sup> )	Maximum Flow Rates gal/hr/ft <sup>2</sup> (liter/hr/m <sup>2</sup> )	Maximum Differential Pressure (psid)
Coarse Filtration	CSF-XC ( <i>extra coarse</i> )	Arrest Fermentation, Gross Clarification, Fining Agent Removal, Bioreduction	24 - 32 (978 - 1304)	30 - 40 (1222 - 1630)	45
	CSF-SC ( <i>standard coarse</i> )				
Polish / Clarifying Filtration	CSF-SP ( <i>standard polish</i> )	High Degree of Clarification, Fining Agent Removal, Bioreduction	8 - 24 (326 - 978)	20 - 30 (815 - 1222)	45
Sterile Prep / Pre-membrane Filtration	CSF-SF ( <i>standard fine</i> )	High Degree of Clarification, Bioreduction, Membrane Filtration Preparation	3 - 12 (122 - 489)	10 - 15 (407 - 611)	21
	CSF-UF ( <i>ultra fine</i> )				

### Sheet Retention and Permeability Ratings

Find the appropriate CSF filter for your application by choosing the desired level of retention and permeability.



\*Based on OSHA mixture exception of <1% crystalline silica for natural DE.

## Physical Sheet Properties

These tests are carried out according to ASTM methods or in accordance with Gusmer's standard laboratory test methods.

Grade Designation	Thickness (mm)	Mass per unit Area (gsm)	Ash Content (%)
CSF-XC	4.06	1100	46
CSF-SC	3.81	1150	46
CSF-SP	3.81	1250	46
CSF-SF	3.81	1350	46
CSF-UF	3.81	1450	51

Note: Test results are typical.

## LRV (Log Reduction Value) Figures

*Onococcus Oeni* used as test organism.

Grade Designation	LRV
CSF-SP	3.0
CSF-SF	6.3
CSF-UF	> 8

Note: Test results are typical.

## Ordering Guide

Filter sheet media are available to fit virtually any size plate to plate filter press, standard sizes are mentioned below.

### CSF - XX - CDXXX

**CSF** - Crystalline Silica Free    **XC** - Extra Coarse    **CD410** - cutting die 410, for 40cm filter press  
**SC** - Standard Coarse  
**SP** - Standard Polish    **CD491** - cutting die 491, for 60cm filter press  
**SF** - Standard Fine  
**UF** - Ultra Fine

Example: To order Crystalline Silica Free Standard Fine filter sheets for your 60cm filter press, the part number would be as follows: CSF-SF-CD491. Filter sheet media are available to fit virtually any size plate to plate filter press, contact your Gusmer Rep for additional options. The standard 40cm and 60cm filters sheets are regularly stocked and ready for immediate shipment from our various US locations.

## Chemical Data

Typical metal extractables for the CSF Series are provided.

Metals	µg/g media
Aluminum (Al)	0.54
Antimony (Sb)	0.03
Arsenic (As)	0.17
Barium (Ba)	0.52
Boron (B)	1.15
Calcium (Ca)	8.25
Copper (Cu)	0.35
Iron (Fe)	---
Lithium (Li)	0.03
Magnesium (Mg)	5.79
Manganese (Mn)	0.02
Molybdenum (Mo)	0.03
Nickel (Ni)	---
Potassium (K)	5.78
Sodium (Na)	25.31
Strontium (Sr)	0.08
Titanium (Ti)	0.05
Tungsten (W)	---
Vanadium (V)	0.24
Zinc (Zn)	0.25

Metals: µg/g of media, pure water flush of 5 L/sq. ft. with 24-hr soak

Note: "----" indicates metal was not detected

Note: Bi, Cd, Cr, Co, Ga, Ge, Pb, Hg, Ag, Sn also not detected in any sample

## Certifications

Other documents including Certificate of Compliance, Certificate of Analysis, and Material Safety Data Sheets are available upon request. Supporting documentation is on file at Gusmer Enterprises, Inc.



**Important Note:** Gusmer Enterprises, Inc. provides this information to the best of our knowledge. This information does not claim to be complete and Gusmer Enterprises, Inc. cannot assume liability for improper use. All users are advised to test products to meet their specific needs.