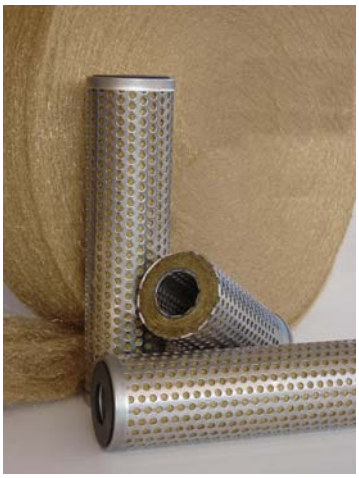
FRS Cartridge Filters and Systems for Machine Coolant and Process Water

A Clear and Clean solution to ***Coolant & Process Water Management***

- *Eliminates chemical additives*
- *Kills bacteria and algae*
- *Systems are portable or fixed*
- *Ends rancid "Monday morning stink"*
- *Eliminates coolant or rinse water waste*
- *Avoids costly waste disposal*
- *Reduces new coolant purchases*
- *Prevents skin rashes*
- *Lengthens coolant and process water life*
- *Extends tool life up to six times*
- *Improves part finish*
- *Captures heavy chips, fines and soluble metals*
- *Applicable for Wash Tanks and Process Water*
- *De-scales process equipment*

ISC also carries these application–oriented products for use in your shop or plant.

- *Coalescers (fixed and portable) for oil and coolant separation*
- *Sump vacs for chips and sludge*
- *Liquid spill clean up*
- *Coolant evaporators*
- *PH Testers*
- *Skimmers for tramp oil removal*
- *Two way drum pumps*
- *Particle removal filtration*
- *Coolant mixers*
- *Compressed air powered cold air guns for spot cooling*



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How FRS Works

By filtering the coolant through layers of high-purity copper/zinc wool inside the perforated tube, the FRS element by oxidation-reduction, electrochemically reduces bacteria and other microorganisms that infect the coolants, as it filters **swarf and contaminants.**

Oxidation-Reduction Process Controlling Microorganisms

The oxidation-reduction process is simply the transfer of electrons from one atom of molecule to another. The FRS filter uses a high-purity zinc/copper alloy for the filtration media. The difference in electrical potential between the metals in the alloy produces an electron flow that continues almost indefinitely.

This oxidation-reduction media produces an electrolytic field that causes cellular damage to bacteria by disrupting electron transport that most microorganisms cannot survive. In water based coolants this media not only kills bacteria by direct electrochemical contact but also by the flash formation of hydroxyl radicals and hydrogen peroxide which interfere with the microorganism's ability to function.

Hydrogen Sulfide Removal

Hydrogen sulfide, a highly corrosive gas, becomes cupric sulfide, an inert, harmless precipitant.

Removing Heavy Metals

The copper/zinc alloy filter media removes dissolved heavy metals such as lead, mercury, copper, nickel, chromium, cadmium, arsenic; antimony, cobalt and most other dissolved heavy metals by direct contact. The removal mechanism is electrochemical and partially catalytic. Soluble lead cations, as an example, are reduced to insoluble lead atoms and electroplated onto the surface of the media.

Filtration

The FRS cartridge will filter particles > 20 microns. Due to the unique design and use of metal fibers, the FRS will continue to operate in conditions where other conventional filters have plugged or ceased to operate effectively.