

MARKET SEGMENT BROCHURE: DATA CENTERS

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# DO AWAY WITH DATA CENTER AND TELECOM DOWNTIME

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PREVENT EQUIPMENT FAILURE BY MONITORING YOUR  
ENVIRONMENT AND PURIFYING THE AIR OF CORROSIVE  
CONTAMINANTS



**purafil**  
Filtration Group®

# IS CORROSION COSTING YOU?



## PREVENT MISSION CRITICAL EQUIPMENT FAILURE BY IMPROVING AIR QUALITY IN YOUR SERVER ROOM

We don't know what we don't know, which is why Purafil offers testing to identify whether or not there's a corrosion-related problem. Electronics are becoming increasingly more advanced and miniaturized. RoHS, commonly called the "lead-free directive", is intended to reduce the use of hazardous substances in electronic equipment. However, ongoing research has shown that printed circuit boards made using lead-free materials can be more susceptible to corrosion, which could cause damage or failure in your mission critical equipment.

A passive air monitoring program using Corrosion Classification Coupons (CCCs) offers an inexpensive air quality indicator for potential corrosion related failure. It also allows you to predict and prevent corrosion by collecting long-term air quality data. Purafil's OnGuard® Smart monitor displays real-time data for corrosion, temperature, room pressure, and relative humidity, providing you with a continuous total air quality reading. This allows you to take corrective action before serious damage occurs. Monitoring ensures that your air filtration systems are running at peak efficiency.

*Purafil Solution: Corrosion Classification Coupons (CCC)*

## KEEP YOUR EQUIPMENT, UPGRADE YOUR AIR WITH DROP-IN FILTERS

Regardless of whether you have an air handling unit already, you need to protect your mission critical equipment from corrosion. This can be done by installing an entirely new system or by adding a gas phase drop-in filter into your existing system.

Purafil follows ISA Standard 71.04-2013 to identify corrosive environments, ranking them from G1 to GX. A G1 environment is generally not corrosive to equipment and electronics, whereas a GX environment indicates that your equipment will likely fail due to the high levels of corrosion. By installing a drop-in gas phase filter, you're able to get closer to G1 levels, which means that your equipment and electronics will require fewer repairs and less downtime.

*Purafil Solution: PuraGRID, Purafilter*

## ELIMINATE CORROSION BY ERADICATING CONTAMINANTS

Neglecting even low levels of corrosive gases can have costly ramifications; downtime, non-compliance of electronic warranty specifications, ghost signals, circuit board failure and complete failure of electronic components (hard drives, DIMMs, capacitors). Gas phase filtration can be used in conjunction with existing air handling systems or as standalone units with customized media to reduce gaseous contaminants to well below specified levels. Properly applied, gaseous air cleaning also has the potential for energy savings.

*Purafil Solutions: Purafil Side Access (PSA), Positive Pressurization Unit (PPU), Corrosive Air (CA) Recirculation Unit*



# PURAFIL PROVIDES THE SOLUTION

## PURIFYING THE AIR TO KEEP IBM UP AND RUNNING

IBM has data centers all over the world that are used for data storage, distribution and processing, making them incredibly valuable to their business. After discovering an increasing failure rate for data storage products manufactured at the facility, IBM enlisted Purafil to protect one of their most valuable assets against corrosion.

The planned data center location in the Salto area of Guadalajara has high levels of air pollution and airborne corrosive contaminants. Purafil was able to verify GX (severe) levels of corrosion that caused product failure. The problem was diagnosed in the manufacturing area at IBM, so when construction began for the data center, IBM was proactive in preventing corrosion.

Purafil installed two side access units with our Puracarb media to neutralize a highly corrosive environment. **As a result, business has been unaffected by corrosion and related issues, and everything is running smoothly.**

Purafil, Inc. is the leading manufacturer of dry-chemical media, scrubbers, and monitors in the information technology (IT) and datacom industries. For the past 50 years, Purafil has provided corrosion control filtration media, filters and filtration systems to help data center and telecom facilities maintain their electronic equipment warranty compliance, prevent corrosion damage, maintain equipment uptime and reduce MTBF (mean time between failures) due to corrosive contaminants.

# PURAFIL'S DRY-SCRUBBING MEDIA ADVANTAGE

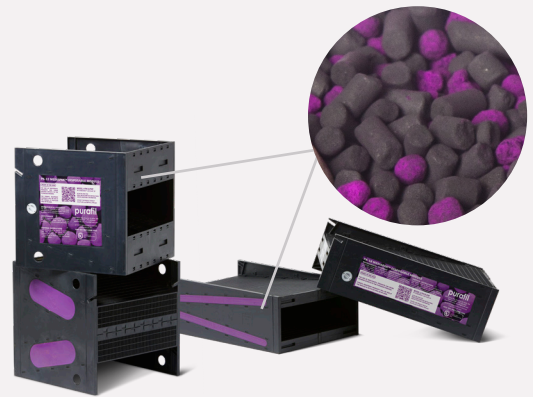
## PURAFIL ENGINEERED MEDIA

Purafil offers a broad selection of dry-chemical pellets called media, which are the core of our air purification solutions. Purafil engineers and manufactures a wide variety of media to remove a wide range of pollutants. Our patented media formulations are manufactured using proprietary chemical formulas that react with corrosive gases and remove them from the air stream. Contaminant gases are chemically transformed into harmless solids that remain trapped inside the media. Known as chemisorption, this process converts harmful contaminants into harmless salts.

Our media provides more than double the removal capacity of comparable competitor products. In most cases, we recommend Purafil® SP Blend media because it removes the widest variety of contaminants and gases such as hydrogen sulfide, sulfur dioxide, oxides of nitrogen and chlorine. This unique formulation is available in Purafil equipment or our patented Purafilter. Our PuraGRID filter offers the same gas removal capabilities and can also be installed into existing air handling systems.

### PK-18 Modules

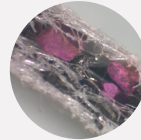
Purafil modules will help you save energy, money and time while improving indoor air quality and preventing corrosion. The specialty design features a durable, adhesive-free construction with highly aerodynamic airfoil screens, easy access sampling ports and the patented Posi-Track™ Purafil technology. Purafil's modules can be inserted into existing module or cassette based equipment. Purafil's professional team of scientists and engineers have created an aerodynamic airfoil screen design. This enhancement provides a lower pressure drop and increased energy savings.



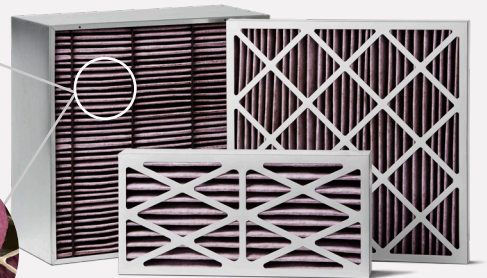
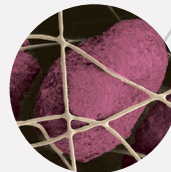
### The Purafilter®

Combination chemical and particulate filter designed to replace existing particulate filters in retrofit or rework applications. The Purafilter contains Purafil SP Blend media and is useful in applications where space limitations exist. Purafil engineers are the first to successfully incorporate sodium permanganate media in a bicomponent fiber matrix, which does not require the use of adhesives so the media is fully available for reaction with gaseous chemical contaminants. Purafil's patented media formulation is evenly distributed throughout the filter structure to assure the highest filtration efficiency

16X Magnified



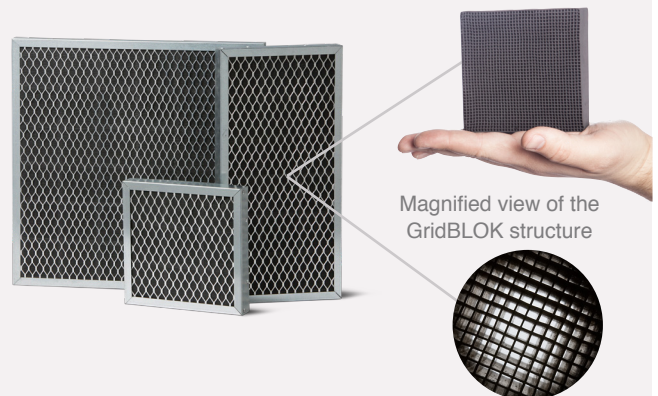
32X Magnified



### PuraGRID™ Filter with GridBLOK™ Technology

Made of extruded monolithic block consisting of a large number of small parallel cells or channels. The GridBLOK™ is composed of essentially 100% adsorbent materials allowing the entire composite structure to function as a gas filter within the PuraGRID Filter. This filter features no bypass, low pressure drop and turbulent air flow with full utilization of the media. PuraGRID filters can be used inside Purafil's custom engineered equipment or installed into existing air handling systems. Purafil manufactures multiple GridBLOK formulations designed to eliminate corrosion of IT and datacom equipment.

GridBLOK Media





# PURAFIL CUSTOM EQUIPMENT

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## FRONT ACCESS SYSTEM (FAS)

The Front Access System consists of box-shaped units called “frames” which may be stacked vertically or horizontally, giving the system flexibility in terms of size and shape. The modular frames are individually tracked for Purafil media modules. The FAS is specified in retrofit applications or custom air handling units.

**Airflows up to 2,000 CFM per 24” x 24” frame**



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## POSITIVE PRESSURIZATION UNIT (PPU)

The PPU is an all-in-one packaged air filtration machine for indoor use. Both particulate and chemical filtration are integrated into one unit, complete with a self-contained blower. It is used to filter gaseous pollutants while providing continuous positive pressure within the space.

**Airflows of 500 - 4,000 CFM.**



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## PURAFIL® SIDE ACCESS SYSTEM (PSA)

The PSA is designed for both particulate and gaseous contaminant control and works in conjunction with the facility’s air handling system. The PSA is a built-to-order system available in more than 20 sizes. A full range of pre-filter selections and particulate final filter selections are also available.

**Airflows of 250 - 50,000 CFM.**



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## CORROSIVE AIR UNIT (CA)

The CA is an all-in-one packaged air filtration machine for indoor use. Both particulate and chemical filtration are integrated into one unit that cleans and recirculates air inside the protected space.

**Airflows of 500 - 4,000 CFM.**

# AIR QUALITY ASSESSMENT AND MONITORING

## AIR QUALITY ASSESSMENT

Corrosive gases are commonly measured in parts per billion (ppb). Quantifying the effects of corrosion requires reactivity or corrosion monitoring (real-time or passive) as prescribed by ISA, ASHRAE, and iNEMI. We assess your environment to determine the types and levels of corrosive gases in your data centers, server rooms, switches, I/O devices, power distribution and UPS rooms. Strict criteria were developed by the International Society of Automation (ISA) to protect sensitive electronics from damage caused by corrosive gases. ISA Standard 71.04-2013 has become the accepted guide for warranties of electronic equipment.

Purafil provides specially prepared Corrosion Classification Coupons (CCCs) for critical operating environments. The rate of corrosion buildup on the coupon, measured in angstroms, is indicative of the environment's severity level – G1, G2, G3, or GX. Purafil performs this service as a diagnostic tool to determine the severity level and potential for corrosion-related problems throughout your facility.

ISA STANDARD 71.04-2013			
CLASS	COPPER REACTIVITY LEVEL (IN ANGSTROMS)*	SILVER REACTIVITY LEVEL (IN ANGSTROMS)*	AIR QUALITY CLASSIFICATIONS
G1	< 300	< 200	<b>MILD</b> <i>Corrosion is not a factor</i>
G2	< 1,000	< 1,000	<b>MODERATE</b> <i>Corrosion is measurable</i>
G3	< 2,000	< 2,000	<b>HARSH</b> <i>High probability that corrosion attacks will occur</i>
GX	> 2,000	> 2,000	<b>SEVERE</b> <i>Electronic equipment is not expected to survive</i>

\*Normalized to a 30-day exposure. 1 angstrom = one hundred-millionth of a centimeter, or  $10^{-10}$  meter.

## AIR QUALITY MONITORING

Purafil's OnGuard® Smart (OGS) Monitor helps protect your equipment by measuring and transmitting, in real time, the level of corrosion in your facility, allowing for action to be taken before problems develop. Purafil's OGS can transmit data to your SCADA system via a 4-20 mA output signal, and is accessible over ethernet. In addition, the Purafil OGS contains internal temperature, humidity, and room pressure sensors. In remote applications, it can be operated as a data logger using battery power. All measurements are directly related to ISA Standard 71.04-2013.

