

2015

Real Solutions for Commercial Kitchen Grease-Related Hazards

Fibrous Filter Media Supplement Existing Removal Systems to Dramatically Reduce Grease Accumulation and Attendant Risks.

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Real Solutions for Commercial
Kitchen Grease-Related Hazards

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Defining Safety
Through Dialogue



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The Problem – Grease Accumulation in Hood / Exhaust Systems

Rapid grease build-up is a hallmark of commercial kitchen hood and exhaust systems. Until very recently it's been all but unavoidable, and even today remains a serious management and safety problem. The free flow of unfiltered grease effluent into the hood-exhaust system creates an unsightly and dangerous mess inside and outside the system, and creates environmental pollution problems. The grease effluent adheres to and builds on all system parts, including the building exterior and ancillary equipment. Accumulated grease is a fuel source posing a significant risk of fire.

Grease accumulation within and around the exhaust system poses a biohazard, a risk to kitchen cleanliness and sanitation, and a serious fire risk for operators, property owners, employees, insurers, and patrons. Moreover, accumulated grease on hood-and-exhaust-system components impairs and compromises the system's operation and functionality, can cause premature equipment failure, and trigger smoke backflow.

Despite the presence and utility of mandated fire-suppression systems, commercial-kitchen fires still occur (and remain far too common) as large cooking flames and high heat are pulled into exhaust hoods, igniting heavy grease loads in ducts beyond the hood, and triggering rapid fire growth into remote and difficult to access parts of the building. These fires can have devastating consequences and costs.

Because of these grease-related fire-safety and mechanical risks, and sanitation issues, it's essential that kitchen operators properly maintain their hood and exhaust systems in a clean condition. It's so essential in fact that it's mandated under a variety of safety regulations, including NFPA 96¹, which also require regular inspections by certified professionals to ensure systems are safe and compliant. Consequently, beyond the risk of fire hazards and filth, commercial kitchen operators *must* properly maintain their system in a safe, clean state, or risk fines, penalties, and even shut down orders from regulatory authorities (city inspectors). An improperly maintained exhaust system is also an invitation to prosecutors and plaintiff's lawyers to assert liability claims against negligent kitchen operators when systems cause damage to others.

Beyond fire risk, other costs associated with grease accumulation in hood and exhaust systems are commonly many thousands of dollars annually, and include inspections, insurance, annual maintenance, repair services, cleaning labor, chemicals, disruption and down time, vast quantities of water, quarterly professional power-cleaning services, replacement parts, and worker injuries.

Traditional Grease-Removal Methods

Methods for managing and removing grease from hood systems have remained essentially the same for over a hundred years. They include labor-and-water-intensive, chemical-based cleaning processes administered by employees and professional cleaning services. Traditional grease-removal methods are time consuming, disruptive, and involve significant costs. Ensuring safety and complying with regulations (e.g., NFPA 96) also require routine inspection of kitchen exhaust ducts and components by certified third-party hood-cleaning companies, usually on a quarterly basis, at significant expense.

¹ **NFPA 96** – National Fire Protection Association's Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. Other regulations governing hood/exhaust system maintenance include:

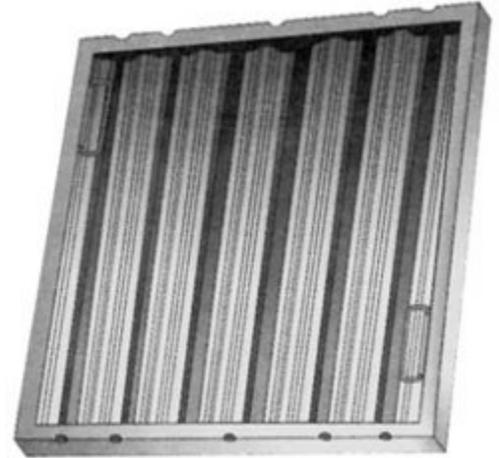
Most hood / exhaust systems also accommodate the placement of metal-baffle grease filters over system openings to both retard flames and capture portions of the grease before it enters. These traditional semi-permanent re-usable grease filters do collect portions of the grease effluent, but don't remove grease and particulates from duct-system airflow sufficiently to prevent system-wide grease buildup, and the release of these undesirable greasy particulates into the environment. In fact, they only capture about 18-20% of airborne grease particles rising into the hood system. As a consequence, even with these metal-baffle filters, grease accumulates within the system at a rate sufficient, on average, to require complete high-pressure and chemical cleaning every 3 months to ensure safety and regulatory compliance.

Because they're on the front line, traditional metal-baffle grease filters themselves pose hygiene and fire-risk issues, and must be cleaned frequently; in many cases it's a *daily* activity. Without such routine cleaning the system couldn't function properly or safely, or in compliance with applicable fire-safety regulations.

Since it's done so frequently, grease-filter cleaning is time-consuming and expensive for restaurant owners and operators. It is labor intensive and requires large quantities of water, chemicals, and energy.

When used by themselves in commercial kitchen exhaust systems, conventional metal-baffle grease filters have other disadvantages as well:

- Frequently removing, cleaning, and replacing filters increases the risk of accidents and associated workers' compensation claims.
- Cleaning chemicals used during nightly cleaning are discharged into drains, along with dirty, grease-laden water, which can create environmental problems.
- Because they don't capture a significant portion of grease-laden effluent, the grease not filtered ventilates into the air (creating another environmental issue).
- Higher extractor-motor maintenance costs due to grease accumulation on blades and motor.



New Grease Filtration Products — Disposable Fiber-Mesh Filters

The nature of the problem and the limitations of existing grease-control efforts have left the industry yearning for an affordable and simple mechanism that can substantially reduce kitchen-exhaust system grease loads without disrupting or altering existing kitchen equipment (apparatus). This is especially true for today's high-heat, high-volume commercial kitchens that run with smaller staffs on tight budgets. These operations need reliable grease-capture and risk-reduction efficiencies to match.

For those seeking to avoid today's cumbersome and expensive cleaning methodologies, the good news is that new grease-filtration technology recently introduced into the market offers *real control* over grease never before available to commercial kitchen operators. Industry innovators have finally tackled the problem and now provide a safe, reliable, simple solution for the marketplace that substantially reduces the grease load, improves hood-system maintenance, prevents fires, and helps manage fire risks while lowering costs — a solution that retrofits *very* easily within existing kitchen systems.

Two new separately patented products are now available to commercial kitchen operators. Both are fiber-based *disposable* grease filters designed to fit over and work in conjunction with existing metal-baffle filters (the UL1046 compliant flame baffles); they don't replace the metal baffles, and aren't intended for use *directly* over exhaust-system openings.

These fiber filters *supplement* existing cleaning methodologies, filter air twice before it enters the hood, dramatically reduce grease accumulation on metal baffles and exhaust systems by substantially removing the fuel source from the airflow before it reaches baffle filters or ductwork, and thereby provide an effective fire barrier and reduce the frequency of system cleaning (baffles and exhaust system can remain grease free and safely functional for up to 3 years between cleanings).

While they are *not* intended to completely replace manual hood cleaning, and while hood-system inspections are still required under NFPA 96 and related regulations, fiber filters are a dramatic leap forward that changes how commercial-cooking operations deal with grease-laden vapors.

NaturalSorb – The Original Grease Filter

The first disposable grease filters were used commercial-kitchen ventilation systems in the New Zealand and Australian marketplace as early as 2003. New Zealand's insurance industry has recognized the technology's safety features — in fact AIG, one of the leading insurers, has used the product in their company cafeteria since 2005.

The company responsible for introducing this technology is Kiwi Bond International, Inc., and the filters are marketed with the name "NaturalSorb." It is the original patented natural-wool filter of this type for commercial-kitchen ventilation systems. The filters are comprised of sheep's wool — wool fibers are a natural and effective grease absorber. The "NaturalSorb" filter received its U.S. patent in 2008 (issued to Gem Char, LLC).



NaturalSorb – The Original Grease Filter

NaturalSorb is a fiber-based disposable grease filter that captures and contains the vast majority of airborne grease particulates *before* they enter kitchen exhaust systems. While independent studies are now underway to quantify actual capture rates, NaturalSorb's manufacturer claims it is as high as 98% (dramatically higher than the 18-20% captured by the metal-baffle flame shields). NaturalSorb filters keep metal-baffle filters and exhaust-system components free of grease for long periods, even exceeding 2 to 3 years, though distributors nonetheless recommend one maintenance cleaning every 12 months.

NaturalSorb disposable filters are flexible open-textured non-woven fibrous blankets made from virgin and fine sheep-wool fiber, fitted and sewn (without adhesive) over a rigid but light steel frame, which further enhances utility, safety, and convenience.² The filters are specially designed to optimize weight and loft to take maximum advantage of the unique biochemical attraction between wool and grease. NaturalSorb's makers stress the scientific fact that wool fiber is "oleophilic" or "grease loving," and the process of "wicking" in which

grease naturally travels and disburse along each fiber — as grease-laden vapors are drawn through the filter they naturally adhere to the wool fibers on contact, and are drawn into the filter core "wicking" along the wool fibers themselves, rather than filling the space between fibers (i.e., premature blocking).

² Each filter has approximately 5 -13mm of loft and a nominal dry weight of 60-145 gsm.

The result is the highly effective, optimized capture of airborne grease droplets (effluent / contaminants) and their removal from the air stream (containment), *without noticeably diminishing air flow through the filter.*

Users can easily see when a filter approaches the limit of its grease-holding capacity and should be discarded and replaced. First, small grease droplets begin forming on the filter's outer fibers as wicking slows, which are securely held by the wool-grease bond and won't drip. Once the droplets are visible, users know that air permeability will start to rapidly degrade. Second, the resulting filter discoloration indicates grease-load levels and the need to change filters.

Wool is considered naturally flame retardant and fire resistant, which is another reason NaturalSorb is comprised of 100% wool. When exposed to flame, NaturalSorb's wool fibers do not support combustion, but only char or smolder. The filters are self-extinguishing. When a flame or flare up is removed, burning stops. These properties are why wool blankets have been recommended for use in extinguishing small fires and why fire fighters' turnout gear (outer protective clothing) is made of wool. NaturalSorb filter mesh is additionally treated with a fire-retardant chemical, and has been tested to and meets all UL and fire-safety standards. These heat and flame resistant properties reduce or eliminate damage to the filter and surrounding parts of the hood system when exposed to open flames and grease flare-ups.

ETL also gave NaturalSorb the NSF sanitary listing.

The major benefit of NaturalSorb is that it's an approved product that does three pertinent things simultaneously:

- It captures the vast majority of grease effluent.
- Does not diminish or impair air flow.
- Does not catch on fire.



Grease Lock System / Commercial Services (Safety Shield)

The Grease Lock System was introduced after NaturalSorb, and has a separate patent based on modifications to NaturalSorb's original design, and a proprietary blend of filter fibers that includes material other than wool.³ Its patent is held by Ellis Fiber USA, LLC, which is also the product's primary distributor, based in Shreveport, Louisiana.

A portion of the fibers are treated with a fire retardant, and its viscose fibers are extremely heat and flame resistant. Its blend of synthetic and wool fibers is claimed to give the filter strength and self-support, the benefits of which are unclear.

Commercial Services, Inc. of Jacksonville, FL, offers a filter product called "Safety Shield," which until late 2014 was a branded version of NaturalSorb (supplied by NaturalSorb's manufacturer to Commercial Services as a distributor). The "Safety Shield" brand filter offered through Commercial is now (January 2015) manufactured by Ellis Fiber, and is no longer the NaturalSorb product, but a different product no longer claiming the benefits of the NaturalSorb technology initially associated with the Safety Shield brand.

Grease Lock's producers state that their filter features "low airflow resistance," has "minimal effects on airflow," that only a very small increase in static pressure will occur, and that no exhaust fan upgrade is usually required. Assuming these statements are accurate, they reveal what experience demonstrates: the Grease Lock filters do in fact affect air flow, even to the point of requiring stronger fans in some cases. According to high-volume McDonald's users, the Grease Lock Filters did cause "air flow issues" during an extended one-year trial period.⁴

Primary Differences between Grease Lock and NaturalSorb

Each of these fiber-filter products, while very similar, is unique and separately patented. A close look reveals important differences commercial kitchen operators should be wary of.

NaturalSorb and the Grease Lock / Safety Shield System are produced and distributed by different manufacturers. Both manufacturers report that their fibrous filters capture 95 to 98% of the airborne grease particles, and these claims are supported by empirical evidence. The fundamental difference between Grease Lock filters and NaturalSorb filters is their composition. The two products are made of different material, and this difference affects performance.

Grease Lock filters contain a proprietary blend of fibers substantially comprised of synthetic material. Independent laboratory tests by fiber specialists conclude that the Grease Lock fiber blend contains less than 20% wool fibers. (Grease Lock publications do not disclose the composition of the filter material.) In use, the Grease Lock synthetic fibers capture moisture before absorbing grease, which diminishes the space available within the filter mesh for grease to accumulate. As a consequence, Grease Lock's grease capture and contain rate per filter is lower. Because they capture both water and grease these synthetic filters reduce air flow and clog faster, and less grease can accumulate within each filter before replacement is needed.

³ The Grease Lock patent failed to make appropriate reference to the prior NaturalSorb patent.

⁴ Rick Woodiel, Maintenance Supervisor, Colemac Management Co., Inc., March 27, 2013.

Because NaturalSorb filters are comprised of 100% wool fibers, coupled with a specific weight and loft formula, they have a higher grease-capture-and-contain rate per filter, and don't absorb moisture. To a certain degree, wool is considered water repellent. Small amounts of moisture (like rising water droplets) will bead and roll off the surface of the fibers, rather than being absorbed. This is due to wool fibers' waxy coating, which naturally repels moisture while attracting and bonding with greasy substances.

With wool, grease first adheres to the wool fibers, "wicking" along the entire fiber, due to the natural attraction of the wool, instead of adhering to already accumulated grease. This prevents the space between the fibers from being prematurely filled with grease adhering to existing grease deposits (grease doesn't build on grease, it builds on the fibers). The result: air flow is maintained for longer periods and grease accumulation adheres evenly and tightly to the fibers.

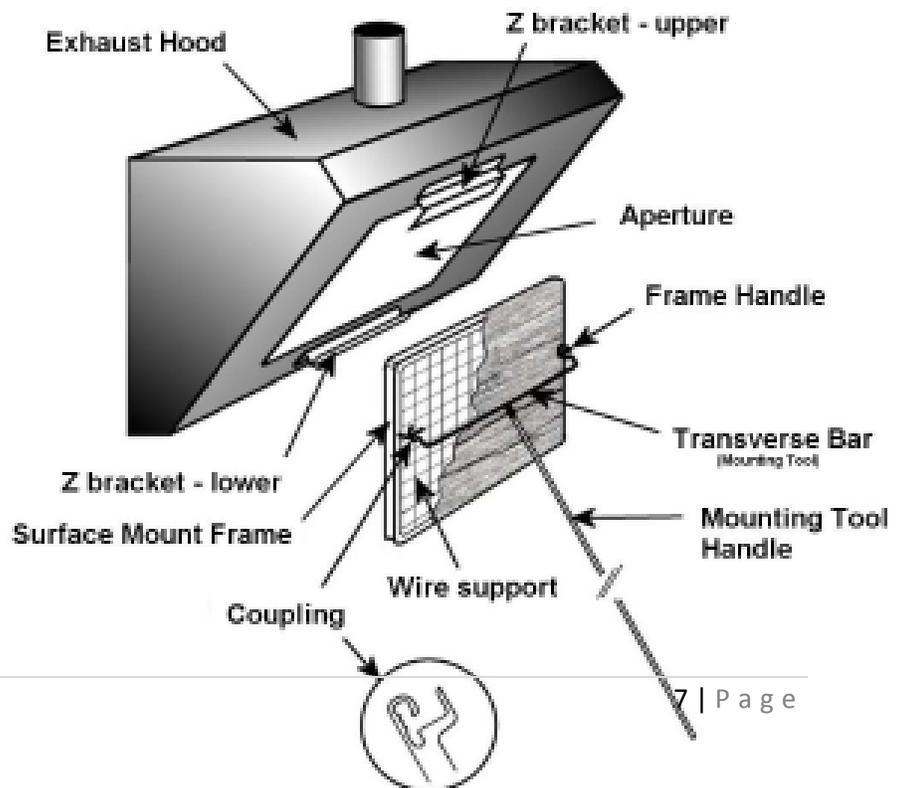
With each filter holding more grease effluent, and holding it more effectively without diminishing air flow, each NaturalSorb filter lasts longer before requiring replacement.

The impact of this difference is simple: both filters will remove a very similar percentage of grease effluent from the passing air stream, but users of Grease Lock / Safety Shield filters will consume a *higher* number of filters, and users of NaturalSorb will consume a *lower* number of filters, to capture and contain the same amount of grease. Commercial kitchens like those in busy chain restaurants (e.g., Applebee's, Chili's, Lonestar, etc.) can expect to consume approximately 20 to 24 NaturalSorb filters and 32 to 35 Grease Lock / Safety Shield filters per month.

Per filter pricing between the products is comparable. Both are presently sold for \$160 to \$170 per case of 20 filters, or \$7.25 per filter.

How do Fibrous Disposable Filters Work?

NaturalSorb installation is easy. They simply slip in front of the 1046 metal-baffle filters. They are installed via slide channels over (in front of) existing metal-baffle filters. The wool-fiber filters are designed to work *with* the metal-baffle filters. They use the existing filter tracking within the hood system and fit between the metal filter and the track wall. Depending on the individual design of the hood canopy and baffle filters, some hoods require the addition of external tracking for the fiber filters, by means of a simple "removable" stainless steel channel bracket that can be snapped into place above and below the opening using a rubber mallet. (NaturalSorb channel installation takes between 30 minutes and two hours and requires no welding; Grease Lock's externally mounted track is permanently welded to customers' hood systems).



Once the channels are installed, kitchen staff can easily remove and replace the disposable filters as needed—in minutes. A special long-handled mounting tool is provided to remove and discard soiled filters and install replacements (eliminating the need for ladders or unsafe climbing on equipment), enabling anyone on the kitchen staff to easily remove filters from the hood and re-mount replacements while standing on the floor.⁵ Filters are best changed before the cook line is heated to avoid hot equipment.

How often do the fiber-based filters need to be replaced? Filters aren't replaced until they have reached their grease-load limit. Replacement frequency and the number of filters used will vary depending on each kitchen's use, volume, hood size and configuration, and the cooking appliances operating below the filters. Cooking devices and methods differ in the amount of grease effluent they produce. Because the filter use rate is unique to each kitchen's experience and circumstances, understanding the actual filter use rate takes a few months of observation. The typical chain-restaurant kitchen can expect to use between 20 and 36 fibrous filters per month.

Advantages and Benefits of Fiber Filters

The benefits of using these supplemental fiber filters are immediate, dramatic, economical, and highly sensible to any kitchen operator. By dramatically reducing grease entering the exhaust hood system commercial kitchen operations quickly improve safety, reduce risks, and reduce costs.

Reducing Costs — Kitchen operators using fiber filters save on a number of levels:

- Labor costs associated with manual cleaning are reduced by at least 75%. Many commercial kitchens clean their baffle filters nightly or every few days. This regularity is no longer necessary — with fiber filter use the metal baffle filters can be cleaned about once per month or less frequently.
- The need for hood and duct cleaning is cut by 75% — so service costs associated with professional hood-system cleaning also fall by 75%.
- Maintenance costs — Costs of repairing and maintaining system equipment, roofs, and building exteriors are much lower. By keeping grease off motors and other system components, and rooftop equipment, reduces repairs and service associated with mechanical dysfunction grease buildup causes.
- Because less cleaning activity is needed, the need for operational shut down associated with hood-cleaning activities (downtime) is minimized as are downtime costs — this saves otherwise lost sales revenue.
- Energy costs are lower because a grease-free system is

“The first location in which we installed the filters is going to need to have the grill side cleaned in a few weeks, and this will be the *first* cleaning in one-and-a-half years. The fryer side is still in great shape.

Instead of cleaning our baffle filters daily, we now only clean them once a month, which saves us water, chemicals, time, labor and money.

I really like the NaturalSorb filters and have seen first-hand the benefits of using them.”

— Rick Woodiel

Maintenance Supervisor
Colemac Management Company, Inc.
(McDonald's Franchisee)

⁵ NaturalSorb's mounting tool is now in final development.

more efficient and consumes less energy.

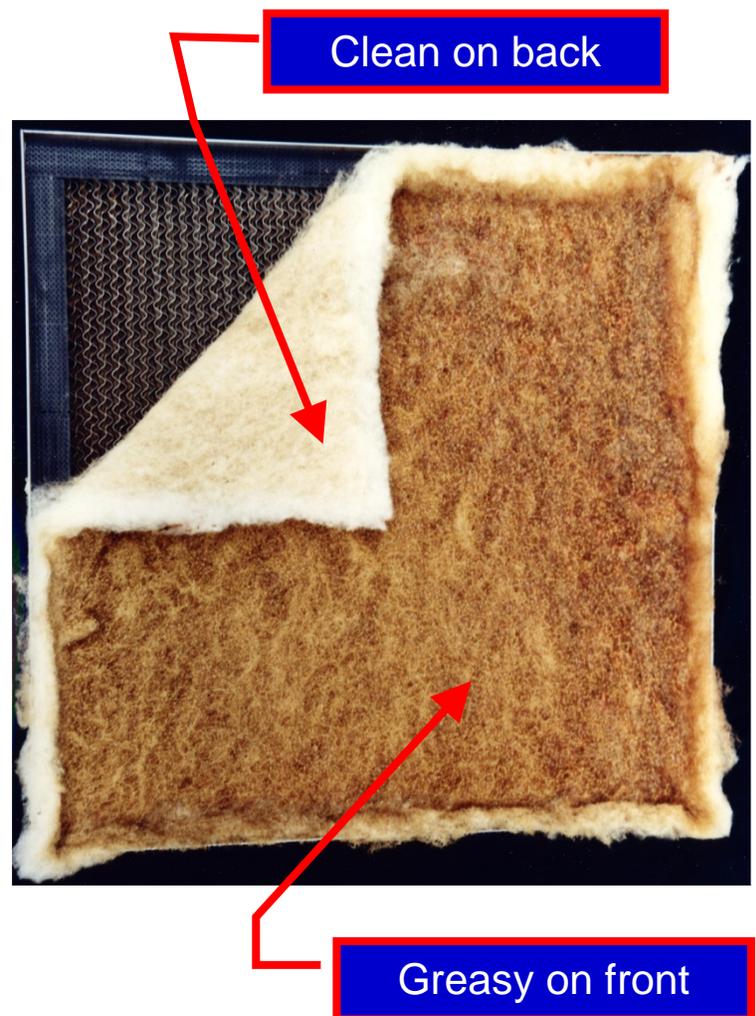
- Cost of chemicals used in cleaning accumulated grease from exposed surfaces is minimized.
- The need for costly rooftop grease-containment devices eliminated in many cases.
- Fewer workers' compensation claims and incidents of employee sick-leave occur as cleaning-related accidents decrease.
- Saves many thousands of gallons of water per year associated with manual cleaning methods. Significantly reduced water consumption saves money.
- Insurance costs decline as system's overall operational safety increases and periodic inspections document this improvement and the diminished fire risk.

Using the fiber filters saves at least \$1,600 - \$2,000 per year per commercial kitchen on average on just out-of-pocket expenses for water, chemicals, labor, and professional hood cleaning associated with cleaning hood and exhaust systems, after taking into account the cost of a year's supply of filters. The many other cost savings noted here are more difficult to quantify, and are perhaps more significant (e.g., reduced legal liability and fewer fires).

Improving Fire Safety / Reducing Fire Risk — Flame-retardant fibrous filters capture the grease before it enters the exhaust system, which greatly reduces the contaminants that enter and adhere to the plenum, duct work, fans, and other surfaces exposed to the grease-laden air flow. With fibrous filters the exhaust system is dramatically cleaner and no fuel accumulates within it to support a fire, thus substantially reducing the risk of a catastrophic fire. This outcome far exceeds current performance objectives and standards (e.g., NFPA 96) concerning grease protection, fire safety and hygiene in commercial kitchens.

Additional Operational Advantages / Improvements

- **Easy Disposal and Replacement** — Fiber filters, once loaded with collected grease, are easily removed and disposed of as part of a commercial kitchen's normal trash. They are welcomed by landfills. Employees easily and quickly install replacement filters as needed with no operational disruption. The filters are easily monitored visually, which means there is no risk of out-of-sight, unseen grease buildup.
- **Reduces exhaust-system cleaning** — Hood and duct cleaning is reduced to about 25% of the cleaning required by current methodologies. This reduction in messy, disruptive cleaning reduces inconvenience, business interruption, and the diversion of labor resources from other essential tasks.



- **Surfaces Remain Grease and Contaminant Free** — Metal-Baffle Filters remain grease free much longer, and
 - Ducts remain clean year round.
 - Grease drainage channels in the hood remain grease free.
 - Plenum, ducting, motor, and equipment remain grease free for long periods.
 - Virtually no grease accumulates on exterior building surfaces and roof.

All of which makes for a cleaner, more sanitary, and safer work and food-preparation environment.

- **Extends Life of Equipment and Roof** — Because grease-laden vapors are contained before they enter the exhaust system, eliminating grease-particle emission from the rooftop fan, grease never makes it to the rooftop. As a result, the need for rooftop grease-containment systems (overflow buckets) is virtually eliminated, and rooftop equipment like HVAC coils and return-air units stay cleaner much, much longer. The roof and equipment located there will not require even close to the same level of cleaning and maintenance and will last much longer.
- **Workers' Compensation Risk and Legal Liability Risks Reduced** — With less cleaning and less fire risk, the overall kitchen operation is safer for employees, and workers' compensation and legal liability risks also decline as less climbing and other risky activities are needed to maintain the exhaust system, and fewer fires occur. Employee safety is critical to kitchen operators, and fiber filters clearly reduce operational hazards and risks.
- Treated with antimicrobial sanitizer; resistant to bacterial growth.

Environmental Advantages and Benefits of Fiber Filters

For a variety of reasons, these new products provide an eco-friendly, environmentally responsible, and sustainable solution to grease-removal needs in commercial-kitchen applications. For many operators taking this positive "green" posture enhances community and public relations.

- **Renewable Resource** — First, there are 50 million sheep in New Zealand, which means that, to the extent fibrous filters are made of wool, they are made from a completely renewable resource.
- **Disposable and Bio-degradable** — Second, they're disposable. NaturalSorb filters, being made of 100% natural wool and steel frames, are all natural and carbon neutral, and have the added advantage of being fully biodegradable. So is the grease, which is protein based and rich in nitrogen and sulfur. Discarded wool filters easily break down in landfills; landfills welcome highly biodegradable content. The Grease Lock filters, being made of a proprietary blend of natural and synthetic fibers and a plastic frame, may not be fully biodegradable.
- **Conserve Water and Reduce Chemical Use** — Third, by reducing the amount of routine filter and system cleaning, disposable fiber filters dramatically reduce the water and chemicals needed to maintain a clean, safe hood and exhaust system. As many as 15,000 gallons of water are saved on average per commercial-kitchen location. Also, the water and chemicals saved are no longer combined with grease and flushed down drains to foul city water systems, lakes, or streams, improving water cleanliness. Pollution is reduced.

- **Conserve Energy** — Fourth, fibrous filters keep the entire hood and exhaust system, and related equipment clean and free of performance-hampering grease buildup for long periods of time, which permits the system and equipment to operate more efficiently. This efficiency translates into lower energy consumption.
- **Grease Particles and Other Contaminants are not Expelled into the Air.** Air pollution from kitchen operations is reduced.

Overall, use of fiber filters creates a cleaner restaurant environment while moving grease pollution from the air, roof, neighborhood, and wastewater systems to a landfill, where it belongs and positively contributes.

Disadvantages of Fiber-Based Filters

When kitchen operators purchase the filters it's important to buy in quantity and have an assured supply on hand. This requires on-site storage space for filter supply. Many commercial kitchens are cramped and very short on available storage space. For such facilities, fiber filters can impose a burden. This minor supply-and-storage-management issue is, however, easily remedied and of little consequence when compared to the dramatic advantages of using the fibrous filters.

Fiber-Based Filters are Embraced by Market Leaders

Fibrous Filters are already being used by national restaurant chains like Applebee's and McDonald's, and food-service retailers like Costco. These operators compete in highly competitive markets and always strive to stay ahead of the competitive curve. Their embrace of this supplemental grease filtration technology is testimony to the importance, utility, and merit of these products. For commercial-kitchen operators who have a certain comfort with existing hood-cleaning processes and procedures, this is a wake-up call. Those who don't quickly make the switch to these high-utility fiber-filter grease-management tools will soon find that they're at a competitive disadvantage and inviting the increasing scrutiny of inspectors, environmentalists, and plaintiff's lawyers.

Close

There just aren't any sound reasons to not use this new grease-management technology. That is, unless you happen to be in the hood-cleaning or kitchen-maintenance business and don't want to see your business decline. The fact is that capturing grease in a disposable media *before* it can create operational safety problems is a much *smarter* way to manage the issue.

NaturalSorb

The Original Grease Filter



“NaturalSorb”	Grease Lock (also OEM for Safety Shield)
Patented in: US, Australia, New Zealand	Patented in: US
Patent Holder: US Patent 7,465,332 NZ Patent 571840 AU Patent 2007240714	Patent Holder:
Made by:	Made by:
Distributed by: Pure Force, LLC Port Clinton, Ohio	Distributed by: Ellis Fibre USA, LLC Shreveport, Louisiana
Wool Content = 100% Natural New Zealand Wool Synthetic Content = 0%	Wool Content = <20% to <50%; Synthetic Content= >50% to >80%.
Passed UL 1046 Flame Test	Comprised of a proprietary <i>blend</i> of fibers, including wool and viscose (Rayon).
Passed UL 710 Abnormal-Flare-Up Test	Passed UL 710 Abnormal-Flare-Up Test
CERTIFICATIONS Intertek ETL Listed in US ⁶ February 2006 — NATURALSORB received ETL certification from Intertek Testing Services, for its use and compliance under UL 1046, UL 710, UL 300, and UL900/ULCS111 Standards. This certification is recognized throughout the world. Tested in full compliance with UL Code Standard test protocols. UL1046 recognized when used <u>in conjunction with</u> a UL 1046 metal baffle filter. ETL report Control Number 100747001CRT-001. NFPA 96 compliant.	CERTIFICATIONS Tested to the UL 1046 Flame-tunnel Test and UL710 abnormal flare-up test. Qualified as a "Recognized Component" that "Conforms to UL Std 1046 & ULC-S649-06 Canadian equivalent of UL Std 1046" when installed in front of a UL 1046 / ULC 649 metal baffle. ETL report Control Number 3190996.
Price: \$160-\$170 per case of 20 filters.	Price: \$160-\$170 per case of 20 filters.
Air Flows reliably through filter even as grease	Air Flow restricts more readily due to manner in

⁶ InterTek is a Nationally Recognized Testing Laboratory in the United States (NRTL). NRTL is an independent laboratory recognized by the U.S. Occupational Safety and Health Administration (OSHA) to test products to applicable product safety standard specifications.

accumulates on fibers due to manner of adhesion.	which grease and moisture adhere to synthetic fibers.
Price: \$160.00 - \$170.00 per case of 20 filters or \$7.25 per filter.	Price: \$160.00 - \$170.00 per case of 20 filters or \$7.25 per filter.
Enhanced by an environmentally consistent spray bond and fire retardant.	
Comes in all sizes, fits all hoods.	
When used in conjunction with a UL 1046 flame baffle, the NATURALSORB filter achieves the ultimate fire-safety goals.	
Discarded filters are completely biodegradable.	Not fully biodegradable.

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Next Steps

Live Safe Foundation is an independent non-profit advocate for fire-safety solutions, and works with experts in industry and fire safety to evaluate the merit and utility of fire-safety products, and where appropriate educates the market and disseminates information on helpful fire-safety options and ideas. If you would like Live Safe's team to evaluate your fire-safety ideas or products, we invite you to contact us.

For more information about the Live Safe Foundation, the Em2 Roundtable series or fire safety in commercial kitchens, please contact Jill Marcinick, Live Safe's President and Board Chair, directly at **614.207.6872**.

We also encourage you to visit www.live-safe.org to join the conversation on fire safety in kitchen settings, saving lives, and fulfilling cooking-related safety duties.



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