

RESTORATION OF COMMERCIAL KITCHEN & FOOD PROCESSING PLANT EQUIPMENT

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AMRestore, Inc.

INTRO

Processing plants and packaging equipment used in the food and beverage industry is leading edge in terms of design and function. Such state-of-the-art equipment includes bulk handling systems, pasteurizers, homogenizers, proofers, mixers, and heaters - as well as freezers, chillers and coolers used to control temperature and ensure safety in the various stages and processes of food production. Food ingredients are stored in vats, tanks, and hoppers until they are routed through a complex system of pipes, valves, pumps, and batch processors. Various cooking (baking, frying, boiling, etc.) and cooling (ambient and mechanical) operations are performed before items are packaged and boxed for storage and eventual shipping to clients. With the advent of new technologies in food processing and an explosion in food science, today's foods now undergo an ever-expanding variety of treatments and processes. Some aim to prolong shelf life, such as irradiation or the addition of natural and synthetic preservatives. Others seek to enhance taste, as with the adding of natural or synthetic flavorings. Some even change the character and composition of foods -- decaffeination and desalination, for example. All involve food processing equipment that is made from what is known as approved "food grade" material. Although much of it is composed of high-grade stainless steel, other alloys, plastics, and composites are used. Some equipment is common to various food and beverage processes while other items are highly specialized, even proprietary. Research & development efforts by food "manufacturing" and processing companies seeking to gain a competitive advantage often leads to equipment that is "one off" in terms of design and performance. Many times, however, innovation comes directly from the factory floor. Workers who have daily hands-on experience using equipment make recommendations that sometimes result in changes to design that have a tremendous positive impact on production, efficiency, packaging, - the bottom line. Whether stemming from an idea in the R&D Lab or a suggestion from the factory floor, the style, design, and function of equipment used in food processing continues to evolve rapidly, causing food manufacturing and processing companies to want to be first with the next best thing.

EQUIPMENT SUBSTRATES

In terms of materials used in the making of equipment used to manufacture and process food, Original Equipment Manufacturers (OEMs) have a long history of utilizing materials that are approved for food use by the National Sanitation Foundation¹ (NSF) and Food & Drug Administration² (FDA). Related electrical systems and mechanical components must also have met and received Underwriters Laboratories³ (UL), Canadian

Standards Association⁴ (CSA) and/or Factory Mutual⁵ (FM) designations in order to be favored by OEMs. Local, city, and county health departments require initial inspections, licenses and ongoing inspections to maintain operation of such equipment. The special materials used to manufacture such equipment include Teflon⁶, Nitrile⁷, Silicone⁸, Viton⁹, Ethylene Propylene Diene Monomer¹⁰ (EPDM) and Type 304 Stainless Steel¹¹. Many are approved/recommended for multiple usage; their brand names are commonly seen in the language of building codes, engineering standards and design specifications. The composition of these materials is such that they are able to be easily and repeatedly cleaned and disinfected. These substrates are inherently rugged, making them good candidates for restoration after any type of loss event.

AFTER THE LOSS

In today's environment, food processing plants and restaurants are hyper-competitive. In order to be competitive, or even to stay in business, operations need to run at peak efficiency. When equipment is out-of-service, efficiency suffers, and the business is adversely affected. Revenues are lost and profits vaporize. At **AMRestore** we understand the value of equipment to restaurant owners. After a fire or water loss incident, we have the experience and know-how to affect a quick and complete recovery. We assure owners that the business can be brought back to normal as long as the right steps are taken at the right time. This involves a plan of action, the right players, and decisiveness in the moment. Many businesses miss the narrow window of opportunity for a quick and complete recovery because they don't know what to do or who to call in the critical period immediately following a loss. **AMRestore** is in the business of helping to educate business owners so that their losses can be minimized by a quick resumption of normal business operations. Specifically, preparation and line equipment can often be cleaned and restored without issue. Hoods, dishwashers, refrigeration units, beverage dispensers, bread warmers, broilers, stoves, ovens, fryers, grills, brick ovens, mixers and walk-in coolers can all be cleaned, sanitized and deodorized for re-service. Cooking and other equipment such as sinks, wash stations, service and prep tables can also be readily restored. However, because most items affected in fire and water losses will degrade with time after an incident, the degree and extent to which *any* item can be restored is almost always directly related to the speed of the initial response. In other words, the time for decision making about what to do and who to call after an incident is now -- before the incident.

A fast recovery may be accomplished with good decision-making and the right players. It takes hard work and the knowledge of specialized cleaning chemicals, processes, and equipment. It takes an understanding of the potential issues of cross-contamination between equipment and facility. Although a quick recovery is paramount, we believe that quality and completeness should not be compromised for the purposes of a speedy recovery. Other factors influence overall recovery, including regulations set by government agencies. Putting equipment into service after restoration, especially equipment used in the preparation of foods is *not always* immediate. Depending upon the locale, health department regulations *may* necessitate pre-testing and/or recertification prior to re-service, including, for example, air sampling, wipe tests, parts per million (PPM) and adenosine triphosphate (ATP)¹² testing. Equipment must meet a standard of cleanliness

determined by the health department. As well, the air in an affected environment must meet a clean and healthy standard. It is **AMRestore**'s business to know what the standards are, and how to achieve them in the most cost-effective and expeditious manner. By following our proven methodologies we consistently exceed health department standards while simultaneously accomplishing the goal of quickly putting the owner back into business. Local building code guidelines and officials must be consulted early to avoid delays with permits, testing and final approval for turn key projects. Proper permitting is vital to re-opening of restaurants and factories experiencing a fire, flood or type of contamination event. Failure to involve code and health departments may result in further delays to getting back in business.

PERIPHERALS, CODES & SAFETY

Because of the materials from which kitchen and commercial/industrial food processing equipment is constructed, it is generally resistant to a vast array of bacteria, viruses, and mold, as well as to staining and corrosion. In short, the food preparation and sanitization needs of the industry make its' equipment a good candidate for restoration. Fast treatment after a loss **almost always** ensures that acidic conditions are reversed and metals restored. On the other hand, equipment exposed to acidic fires and the highly acidic air they create (and which can remain for long periods of time) can have surface acidic levels 10 times higher than under normal operating conditions. Left untreated in a corrosive environment, the surfaces of equipment can begin to oxidize, or, simply put - to rust. Unmitigated, rust will rather quickly pit base metals and damage alloys. Besides damage from smoke and acid, water from fire suppression devices, including sprinkler systems and fire hoses, if not removed quickly, will cause rusting and pitting. Even in the absence of water on the surface and inside equipment, the extremely high levels of humidity common in post-fire environments are enough to cause severe damage to equipment. The bottom line is this - equipment is most often restorable to pre-loss condition with fast action and a proper recovery plan.

With a proper plan the great majority of equipment and fixtures involved in a fire or water loss can be fully restored and reconditioned. More than just surface contaminants must be addressed. Repairs to burners, adjustments to controllers, checks of exhaust and grease traps and air handling systems must also be made. Equal-air systems, grease filters, air filters, grease hoods, moisture hoods and heating, ventilation & air conditioning (HVAC) systems must operate properly to reduce heat and exhaust gas, mainly CO². It is therefore essential that these "peripherals" are treated. High-pressure gas lines must also be re-tested using pressure testing. Fast-acting valves and actuators that close rapidly in the event of a pressure variation or even a fire (in some designs) must be checked.

Checking for code upgrades is vital. Advances in the mechanical capability of equipment have, in recent years, been paralleled by advances in safety design. It is important to know, in terms of safety and legality, as well as replacement vs. restoration cost analysis, if any new code or safety design is in force or has been developed. All other considerations being equal, it is generally far more cost-effective to restore equipment than to replace it. However, it is imperative that code upgrades and potential safety design advances be

evaluated when making a decision to restore. At **AMRestore**, we insist that our professionals perform due diligence when evaluating all options.

CONCLUSION

As a business owner or manager, or the person in charge of contingency planning in a business, institution, or facility of any type, it is essential that you create a “catastrophic loss/recovery” plan. The plan should identify, at a minimum, who the decision makers are in the company, and who to call (mitigation professionals) to begin immediate mitigation. A fast and complete recovery may be accomplished with good decision-making and the right players. Remember that time is always ticking in terms of restoration and restorability when it comes to a loss situation. A window of opportunity exists to initiate mitigation and begin the process of quickly getting the business back to full capacity. Once the window has passed, losses due to business interruption are likely to be much greater. The longer the equipment remains untreated and unmitigated the more the restoration of the equipment will cost making for higher claim costs and a higher rate unsalvageable recovery. Fast action is the key to success. The specifics of mitigation and restoration particular to commercial and industrial kitchen and food processing equipment have been discussed. In short, the recovery plan and work methodology should ensure that after restoration all equipment is functioning properly and meeting fire, safety and design specifications. Besides the actual equipment, peripherals must be checked, as well as fast actuating safety gas valves, fire suppression systems, and electrical control panels. All must be cleaned and certified to confirm that the equipment is functioning in proper sequence and timing, that electrical shorts have been eliminated, and that all safety equipment is proven to be back in order and fully operational.

At **AMRestore** we work smart and hard to reduce down time and business interruption. We believe a great plan plus a great team results in a great job, and that we are well-suited to be a part of any companies’ catastrophic loss/recovery plan and team. We are a company that is well-equipped with trained technicians and engineers who understand the various food industry machine types and functions, as well as the restoration cleaning standards and regulations specific to health department regulations. Food industry high standards and regulations are paralleled only by medical industry guidelines. The US government was the first in the world to enact measures to ensure high quality and safe food standards for consumers called the “Wiley Act of 1906” also known as the Pure Food and Drug Act¹³. Reducing food borne disease and illness to clients is of prime concern to the entire food industry. More importantly, we understand what it is like to be standing in the middle of a crisis. We do it every day as the preferred choice of business owners, managers, and insurance professionals - and we’ll do it for you.

Footnotes:

¹**NSF- NSF International**, founded in 1944 as **the National Sanitation Foundation**, is known for the development of standards, product testing and certification services in the areas of public health, safety and protection of the environment. Copyright © 1996-2009 NSF International. All rights reserved. All text, images, graphics, and other materials on this site are subject to the copyrights and other intellectual property rights of NSF International. NSF International owns the copyrights in the selection, coordination and arrangement of the materials on this site. These materials may not be copied for commercial use or distribution, nor may these materials be modified or reposted to other sites, without the prior express written permission of NSF International. <http://www.nsf.org/>

²**FDA- Under the control of the Department of Health and Human Service The U.S. Food and Drug Administration** is a scientific, regulatory, and public health agency that oversees items accounting for 25 cents of every dollar spent by consumers. Its jurisdiction encompasses most food products (other than meat and poultry), human and animal drugs, therapeutic agents of biological origin, medical devices, radiation-emitting products for consumer, medical, and occupational use, cosmetics, and animal feed. The agency grew from a single chemist in the U.S. Department of Agriculture in 1862 to a staff of approximately 9,100 employees and a budget of \$1.294 billion in 2001, comprising chemists, pharmacologists, physicians, microbiologists, veterinarians, pharmacists, lawyers, and many others. <http://www.fda.gov/>

³**UL- Underwriters Laboratories®** is an independent product safety certification organization that has been testing products and writing standards for safety for more than a century. UL evaluates more than 19,000 types of products, components, materials and systems annually with 21 billion UL Marks appearing on 72,000 manufacturers' products each year. UL's worldwide family of companies and network of service providers includes 62 laboratory, testing and certification facilities serving customers in 99 countries. There are many types of UL Marks described below, each with its own specific meaning. The only way to determine if a product has been certified by Underwriters Laboratories® is to look for the UL Mark on the product itself. In a few instances, the UL Mark may be present only on the packaging of a product. Some products certified by UL are components that are intended to be used in the manufacture of a complete listed product. These components cannot bear the UL symbol, but may use a special Recognized Component Mark.

The UL Mark on a product means that UL has tested and evaluated representative samples of that product and determined that they meet UL requirements. Under a variety of programs products are periodically checked by UL at the manufacturing facility to make sure they continue to meet UL requirements. The UL Marks may be only used on or in connection with products certified by UL and under the terms of written agreement with UL. In addition to these marks, UL also provides access to the marks required in a number of other key world markets. <http://www.ul.com/global/eng/pages/>

⁴**CSA -Canadian Standards Association (CSA)** can test and certify products you are selling at home or exporting to the U.S.A. and Canada, eliminating the need for duplicate testing - saving you time and money. We test products to Canadian and U.S. standards and issue the CSA Mark for qualified products. CSA International can also test products to European and other national standards. © Copyright 2004 Canadian Standards Association. All Rights Reserved. <http://www.csa-international.org/>

⁵**FM- FM Global** works to protect assets and minimize the potential for losses for our clients worldwide through a unique combination of engineering, underwriting and claims. We conduct hands-on research and deploy on-the-ground engineers to ensure our products and services remain the best available and directly support risk management processes and objectives.

The *Approval Guide*, an online resource of FM Approvals, provides complimentary access to a fully searchable Web-based database of the most up-to-date information about 50,000 FM Approved fire protection products, building materials, electrical equipment and services that conform to the highest property protection standards. Authorities having jurisdiction (AHJs), architects, consulting engineers, facility managers, and product buyers rely on the *Approval Guide* to help them make well-informed decisions about which products and services on the market will best reduce their property-loss risks. ©1999-2009 FM Global. All rights reserved <http://www.fmglobal.com/page.aspx?id=50000000>

⁶**Teflon- Teflon®** is best known for its slipperiness, which is useful where non-stick features are important. DuPont revolutionized the cookware industry with the introduction of Teflon® non-stick coatings for cookware, making cleanup a breeze. High-rise buildings that use DuPont™ Certified Limited Combustible Cable are safer from smoke damage. And, Teflon® used in fabric protection keeps clothing and carpets looking newer, longer. Copyright © 2009 DuPont. All rights reserved. The DuPont Oval Logo, DuPont™, The miracles of science™ and all products denoted with ® or ™ are registered trademarks or trademarks of E. I. du Pont de Nemours and Company or its affiliates. http://www2.dupont.com/Teflon/en_US/keyword/index.html?src=search_us_teflon

⁷**Nitrile-** UniSeal® Nitrile Gloves for food processing / food handling are made from 100% soft blue Synthetic NBR (Nitrile Butadiene Rubber), a synthetic compound that's completely latex-free . Non-Latex Nitrile gloves do not contain allergy-causing proteins; therefore they can provide an excellent alternative for people who experience latex sensitivity and have the potential for adverse allergic reactions associated with latex protein.

The soft Nitrile food processing / food handling gloves material reacts to your body temperature and conforms to the shape of your hand, making them exceptionally snug. So you get a cool, dry, precise fit, with far less hand fatigue. Nitrile material also has a naturally low coefficient of friction, making them easy to don (put on). Disposable Nitrile food processing / food handling gloves provide a high degree of softness, sensitivity, feel and flexibility. UniSeal® Nitrile food processing / food handling gloves are also far more resistant to punctures and tears than either latex or vinyl (Nitrile gloves are three times more puncture resistant than natural rubber), and disposable Nitrile food

processing / food handling gloves stand up to a variety of greases, fats, oils, and bases. © 2006
www.safecare-gloves.com

⁸Silicone- Comprehensive Report Detailing Silicone Products for Food Contact Applications Posted on: Tuesday, 20 May 2008, 03:00 CDT Research and Markets <http://www.researchandmarkets.com/reports/c92251>) has announced the addition of "Silicone Products for Food Contact Applications" to their offering. Silicones, which can vary from low molecular weight oils and fluids, to rubbers and extensively cross-linked resins, are used in a variety of different food contact situations and conditions.

The origin of this review report was a Food Standards Agency (FSA) project on food contact silicone based materials that was carried out from 2003 until 2005. The objective of this project was to provide detailed information on the types and composition of silicone based products that are used in contact with food and to identify the extent to which the migration of specific constituents into food could occur. In addition to giving a summary of the findings of this extensive FSA project, this review report also provides an extensive overview of the principal types of silicone products that are used in food contact situations, from a description of their manufacture and chemical composition, to a detailed review of the potential migrants and their migration behavior. It also covers the relevant national and EU food contact legislation and describes recent, food related, technological developments.

This report is the final one of a trilogy that has addressed food contact materials. It joins a report summarizing the current situation with respect to the use of rubber products for food applications (Review Report No. 182) and one reviewing the use of coatings and inks (Review Report No. 186). For more information visit <http://www.researchandmarkets.com/reports/c92251>

⁹Viton- Fluoroelastomers for repeat use food contact Viton® GF-600S and Viton® Extreme™ ETP-600S Fluoroelastomers have been developed to seal pharmaceutical, food and beverage processes where repeat-use food contact compliance is required. According to DPE, these FDA-compliant Fluoroelastomers provide superior steam resistance than silicone, better caustic cleaning fluid resistance versus EPDM and bisphenol-cured FKM, and low total organic carbon and metal extractables similar to PTFE. The new Viton® types are made with Advanced Polymer Architecture (APA), a proprietary development by the company that improves the performance of specialty Fluoroelastomers.

Viton® GF-600S is a high-fluorine, peroxide-cure type of specialty Fluoroelastomers that exhibits superior resistance to steam and to a much wider variety of cleaning fluids than older bisphenol-cured FKM, and also offers excellent physical properties, including resistance to compression set. FDA food contact compliance for Viton/Viton® GF-600S with limitations/specifications for repeat-use applications is outlined in Food Contact Notification (FCN) 510*.

Viton® Extreme™ ETP-600S is a unique specialty Fluoroelastomers copolymer that exhibits excellent resistance to steam and to attack by an exceptionally broad variety of chemicals and fluids, including aliphatic and aromatic hydrocarbons, acids, bases, all types of alcohols and even low molecular weight ketones, esters, and aldehydes. FDA food contact compliance for Viton® ETP-600S with limitations/specifications for repeat-use applications is outlined in Food Contact Notification (FCN) 539*. Copyright© 1996-2009 DuPont Performance Elastomers. All rights reserved. DuPont™ is a trademark of DuPont and its affiliates. Copyright© 2009. All rights reserved. <http://www.dupontelastomers.com/News/English/press.asp?pressrelease=2006-05-12-achemaviton>

¹⁰**EPDM**- There are particular requirements which need to be met for the use of precision O-rings in the food and pharmaceutical industries. The newly developed EPDM material AP 302 from COG has two of the most important approvals for these areas: it passes the clearance test for harmless products according to FDA 21 CFR Section 177.2600, and has been given a release certificate in accordance with USP Class VI in Chapter 88. Here the material was tested up to 121 °C and not, as is usually the case in the market, only up to 70 °C. This ensures additional safety when used in critical areas. AP 302 has been designed especially for use with liquid or fatty media. The new sealing material is very well suited for an operating temperature range of -40 °C to 150 °C, and in particular also in the case of contact with CIP/SIP media. This means AP 302 provides great flexibility when used in different production processes in the pharmaceutical and food industries.

http://www.cog.de/fileadmin/downloads/COG_SPL_AP-302_en.pdf

¹¹**T304 SS** (aka Type 18-8 SS) - Stainless Steel: [NSF/ANSI 51 Section 4.2.1]: 16% chromium (min) AISI200, 300, 400 Series; less than 16% (hardened) acceptable for knife blades. Copyright© 2009. All rights reserved by the American National Standards Institute, Inc. <http://www.ansi.org/>

¹²**ATP- ATP testing** Adenosine triphosphate (ATP) testing is usually done with specific ATP equipment. In general, ATP takes little time or work to prepare. People using the testing unit require training to use it properly. ATP tests provide instant feedback on how the sanitation program is working. They are considered to be “real-time” because the results are available in minutes (as opposed to days). ATP testing should be supplemented with microbiological analysis. How ATP testing works ATP is a chemical compound found in all living cells or cells that were once living, including bacteria, food debris, yeast and mold. Bioluminescence is a chemical reaction that produces light, such as the light produced by fireflies. ATP bioluminescence occurs when ATP from a sample comes into contact with luciferase and luciferin. The amount of light emitted in this reaction is directly proportional to the amount of ATP detected in a sample. The more ATP detected on a food contact surface, the more light is produced. Measuring the light provides a good measure of the number of living cells (bacteria). The ATP tests detect both microbial ATP and that associated with residual foods and, therefore, can be used to verify the effectiveness of the cleaning step of your sanitation program. [http://www1.agric.gov.ab.ca/\\$Department/newslett.nsf/all/fss13649](http://www1.agric.gov.ab.ca/$Department/newslett.nsf/all/fss13649)

¹³**The 1906 Wiley Act or the Pure Food and Drug Act**- The muckrakers had successfully heightened public awareness of safety issues stemming from careless food preparation procedures and the increasing incidence of drug addiction from patent medicines, both accidental and conscious. Scientific support came from Dr. Harvey W. Wiley, the Department of Agriculture's chief chemist, who published his findings on the widespread use of harmful preservatives in the meat-packing industry. The experience of American soldiers with so-called “embalmed beef” during the Spanish-American War added impetus to the movement. <http://www.fda.gov/opacom/laws/wileyact.htm>

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