

FOOD GRADE PLATFORMS:

Abiding by the highest standards

How properly designed food grade platforms can mitigate potential food safety risks and hazards.

When it comes to the safety and security of America's food supply, food and beverage companies understand they only have one option: abide by the highest standards put forth by regulating bodies in the industry to ensure consumer safety.

In 2013, the Food and Drug Administration (FDA) proposed some of the most sweeping food safety rules in decades, in response to high-profile outbreaks of food-borne illness and death from salmonella in cantaloupe, mangoes, and peanut butter.

One of the proposals called for by the new Food Safety Modernization Act (FSMA) has food companies documenting plans to identify potential hazards, putting in place steps to address those hazards, verifying that these steps are working, and outlining the resolution of any issues. The FDA would evaluate these plans and continue to inspect facilities to make sure that the plans are being implemented properly. These measures would be a concerted effort to prevent food contamination, instead of just reacting to outbreaks.

While many of these new rules build on existing voluntary industry guidelines and standards for food safety—which many companies already follow—it has also put the spotlight on the identification of risks and hazards that can occur on the production floor and the continuing need to comply with Good Manufacturing Practices (GMP).

Food safety and GMP begin with the equipment used in the processing and handling of food products. In many food and beverage plants across the country, one of the most common pieces of equipment in use today is a mezzanine or work platform. Sometimes used to take advantage of a facility's available height in space-constrained areas, work platforms are commonly used in food production to support conveyors and allow access to equipment. These platforms are typically custom-built to fit around existing equipment or building obstructions.

When used in zones where product is open (not yet packaged), these elevated



Food grade platform used as a catwalk for multiple processing areas. Photo inset: All joints are designed to minimize cracks, crevices and protrusions and configured so as not to form traps, recesses or pockets.

structures must be “food grade” or “designed, fabricated, constructed, and installed according to sound sanitary design principles.” These design principles require food grade platforms to be: (1) regularly cleaned and maintained; (2) made with materials and surfaces that can withstand regular cleaning and sanitizing, corrosive food products and the production environment; and (3) have a structure that is closed or fitted tightly, free of cracks and crevices that may harbor debris, pests and mold.

This white paper will detail the features and benefits of properly designed food grade platforms that accommodate varying degrees of sanitary design requirements and guidelines. It will also discuss the options available for fabrication and installation, such that it meets a facility’s needs, timetable and budgetary concerns, with the primary goal of reducing sources of potential food safety risks. This paper will then conclude with a real-life application of food grade platforms at a beverage filling plant for Pepsi Beverages Company, an organization committed to the highest standards of food safety.

What are food grade platforms?

From surface finishes to fabrication materials, food grade platforms are generally constructed according to sanitary guidelines that make them “food grade.” As a general rule, they are to be fabricated and designed in such a way that they can be easily cleaned, inspected, and maintained.

They are absolutely critical when the platforms are to span directly over products for human consumption. The entire structure—from supports to deck floors to handrails—many times has to be properly caulked and sealed to prevent or minimize catch points where bacteria, pathogens, allergens, microbiological organisms or other debris could collect, grow, and ultimately contaminate the food or beverage.

Uses and application: In the food and beverage industry, these platforms have a variety of uses and applications. Most are used to support conveyors and production equipment, sometimes over open product zones. Many are built as crossovers and catwalks to connect separate areas. Some are designed to accommodate workers for actual production work; while others are built to allow accessibility to pieces of machinery.

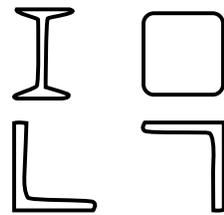
Surfaces and materials: Because work platforms are frequently “non-contact surfaces” (where food product or ingredient contact normally does not occur), platform surface standards are not as strict as standards for “product-contact surfaces.” At a minimum, the surface of food grade platforms must be uniform with smooth seams, free of pits and crevices, be corrosion-free, and durable.

In many cases, a painted finish over *carbon steel* is acceptable and is much more economical than galvanized or stainless steel. It can also be resistant to impact, moisture, chemicals, ultraviolet light, and other extreme conditions.

Galvanized steel is another option to ensure long-lasting corrosion resistance, and is more economical than stainless steel. To ensure the longest-lasting corrosion resistance, *304 Stainless Steel* is yet another option and one of the best for processes requiring wet cleaning. *Aluminum* is also a good option, although it is very soft and thus easily gouged.

Decking: For a dry environment, smooth plates are preferable for platform decks because dust and product accumulations are easier to clean. Although more expensive, aluminum and stainless steel are good options because they do not require painting—a process that must be continuously maintained. Open grating should never be used over elevated areas that could potentially

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Avoid



Good

contaminate product zones below. Stainless steel plate with seams welded during installation is another sanitary option.

Other design guidelines: Food grade platforms are typically designed with clean shapes, such as tube steel or angles with the legs facing down. For dry environments, tube steel framing is a preferred, cleaner design with hidden fasteners in the framing and handrail to keep small crevices to a minimum. For very wet environments—such as facilities with meat, poultry, or seafood processing—tubing in the structure may not be as desirable, because the potential to collect water from a breach is increased.

A kick plate bordering the platform decking ensures that spilled product does not contaminate the level below. If this is a highly critical concern, a kick plate seamlessly integrated with the decking material will be the best option to ensure product containment. This is most readily achievable with aluminum decking, but can also be accomplished with various types of steel.

All joints and edges should be designed to minimize horizontal ledges, cracks, crevices and protrusions. The structure should be configured so as not to form traps, recesses or pockets. Hollow stock should have ends closed. Sufficient clearance should be provided within and around the platforms to permit access for inspection and cleaning. For that same reason, equipment, except those with a solid base, must be 6 inches from the floor.

Installation: Installation durations will vary depending on whether the food grade platform is “stick-built” or “modular.” A stick-built platform is essentially built at the job site, while a modular platform is pre-fabricated at the vendor’s production facility, and then transported to the job site where the pre-assembled pieces are simply bolted together.

The stick-built platform will need substantially more space to assemble all the steel and materials at the job site plus an area for workers to measure, cut and weld the platforms. A modular platform requires no cutting and welding in the clean facility because the structure has been pre-measured and pre-assembled.

When it gets to the job site, installers simply bolt the pieces together, similar to an erector set. Installation time—which can take up to two weeks for a stick-built platform—is cut in half with the modular platform. As a result, production facilities prefer it because it’s a cleaner installation with fewer disruptions.

Inspections and approval: Newly installed work platforms, along with any new food processing equipment, are typically submitted for audit and inspection. American Institute of Baking (AIB) International, a not-for-profit food safety organization, frequently rates equipment for food safety. For example, flaking paint or rust on structures over open product zones may be unacceptable while normal mild oxidation on non-food contact surfaces may be acceptable.

An Inspection example:

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Case Study: Pepsi Beverages Company

With this deeper understanding of food grade platforms, let’s consider a real-life application by Pepsi Beverages Company. In 2012, the company installed food grade platforms at its Dallas, Texas, production plant. This is a look at how engineers designed the platforms to minimize potential food safety risks and hazards to its beverage filling line.

Pepsi’s platform perfection

Since the creation of its iconic Pepsi-Cola soft drink in 1898, PepsiCo has grown into a global consumer products leader offering a vast portfolio of food and beverage brands. One of its divisions, Pepsi Beverages Company (PBC), manufactures, sells, and distributes some of the company’s most recognized beverages—including Pepsi, SoBe, Gatorade, and Mountain Dew—in the United States, Canada, and Mexico.

Food Grade Platforms: Preventing food safety risks and hazards

In 2011, as part of consolidation strategies, the company decided to relocate a beverage filling line from an Oklahoma facility to an existing 50,000-square-foot facility in Dallas where it was currently operating three other filling lines for the Gatorade and SoBe beverage brands.

“We did not want to relocate any of the original platforms that were around this line,” says Ken Graham, project lead and senior principal engineer for PBC. “We wanted to put this new line in a completely different configuration.”

To aid in this effort, Graham and his team chose Cubic Designs, a Wisconsin-based provider of food grade platforms and mezzanine structures, to design, manufacture and install these new 18-foot-tall platforms that would span a total of about 4,000 square feet between two separate areas of the filling line.

Because safety is first in everything they do, Graham and Cubic Designs first made sure the platform design met OSHA’s safe work standards. Because these platforms would be supporting conveyor and other equipment over an open product zone, they also had to make sure the platforms met—and exceeded—all of the company’s strict food grade standards.

The platform’s structures had to be made of galvanized steel to keep them corrosion resistant. “The hot-fill process involves pasteurizing the product, resulting in a very humid atmosphere,” explains Graham. Along the edges of the platform, a 4-inch to 6-inch kick plate prevents particles from falling down onto the open bottle area on the bottom level. “These kick plates were sealed to eliminate even airborne particles from falling over.” Where the floor bolts to the platform’s frame, any cracks or openings were sealed and caulked to prevent any dust or mold growth.

Fabrication of the structure took about six to eight weeks to complete. Installation was even quicker than regular, non-food grade platforms. “Cubic Designs used a pre-built structure, which they design in their plant, and then just bolt together at the customer’s site,” says Graham. “This greatly reduces the amount of metal fabrication, metal shavings, etc. on the production floor. This also allows for quicker assembly and less down time needed for installation; including a much easier clean up after the install.”

A few months later, Pepsi hired an independent auditor to inspect the new line. They received very favorable comments. Graham attributes this success to definitively knowing what was needed before getting quotes from different vendors. “It’s far easier to communicate in the early stages. The more detail you can give somebody as you are doing a quote or drawing, the better.”

A last word on food grade platforms

With more stringent food safety rules being proposed for the food and beverage industry, companies are paying careful attention to equipment being used in their food production and processing plants particularly in open product zones.

When designed properly, food grade platforms—used to support both equipment and workers—can reduce, and even eliminate, potential risks of product contamination. By using pre-built structures that simply bolt-in at job sites, platform installation is more efficient and cleaner, allowing production facilities to quickly pass rigid food safety audits and inspections.

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