

STAINLESS STEEL BASICS

A GREAT PRIMER FOR NEWCOMERS AND A REFRESHER FOR THE EXPERIENCED

By Stacy Ward, Managing Editor
fedastacy@verizon.net

When Advance Tabco's Vice President Al Alderman visits a dealership to discuss the particulars of his lines, there are questions that occasionally come up that no one wants to ask. What's the difference between 201 stainless and 430? How do you justify upselling a 16-gauge worktable to a 14-gauge? "Can I use galvanized legs and undershelf or do I have to go with stainless?" One inquiry leads to two and then snowballs into an avalanche of interest swirling around applications, trade-offs and budgets. It's the kind of exchange Alderman, an E&S lifer, likes to sink his teeth into.

Galvanized vs. stainless? "There's a lot that goes into selecting the right fit—economics, function, etc." says Alderman, who's been with Advance Tabco for 26 years. "I make a 14-, 16- and 18-gauge work table, stainless steel top. How does economics play into the decision? The lesser gauge is cheaper but not as durable. Is it just for regular use or do you need a battleship, like a 14-gauge, for pounding meat or running slicers?"

"Then, you have to consider what's going to be under the table. Do I want it to be stainless or galvanized legs and undershelf? Galvanized is a mild steel with a zinc coating to prevent corrosion. It's cheaper but it doesn't look as pretty, which is an issue for consultants, and it's also not as durable in the longterm as stainless. Think about an old fence. It does a great job preventing rust as long as the coating does not get rubbed off and expose the steel underneath. End users typically like to use it for storage areas like undershelves as well as legs, where the coating is less likely to be rubbed off. In the end, it's a trade-off. The price point is attractive but many people want the look and durability of stainless steel."

Which means that if you're a dealer sales rep, finding the right fit for a customer requires a bit of acrobatics, and most certainly a strong foundation in product knowledge. For Alderman, that starts with the basest of basics—like knowing the characteristics of the most common stainless alloys (or grades) used in E&S or that the term gauge refers to the thickness of a sheet of stainless steel. The lower the number the thicker the metal, so 14-gauge stainless would be thicker than 18-gauge but not necessarily superior in quality, says Alderman.

"There's a perception that lighter gauges are inferior to heavier gauges," he says, "but in

reality, construction and intended use are critical criteria when selecting a product. Years ago, everything in a kitchen was built using heavy-gauge steel. Fourteen or even 12 and 10 gauge was the norm across all sorts of products, which produced battleships. Over the years, lighter gauges have slowly become acceptable for certain applications, for instance, where the steel is just a skin over an appliance like a refrigerator or stove.

"Other stainless items such as sinks and tables also now offer lighter gauge alternatives, which cost less money and if well-constructed are quite suitable for many applications. More recently, price-driven imports from Mexico and now China and Southeast Asia have found a market for a low-end price point by using lighter gauge materials and lesser construction standards. In the Internet age, many end users buy on price without an appreciation for design, construction and durability."

Making the Grade

Nothing could be farther from the truth about product specialist Eric Von Kaenel. For 40 years he's been a fixture at ventilation systems manufacturer Avtec and still loves the grind. Pricing the product, design, marketing, training in the field, Von Kaenel has a hand in it all, so he knows his stainless. And he's been around long enough to witness a few major shifts—one of the most pivotal being the result of spikes in nickel costs from 2006-2007.

"Type 304 has the highest concentration of nickel out of all of the grades, and what nickel does to stainless steel is make it more pliable," says Von Kaenel. "Of course, Unified Brands buys a lot of steel and we were getting tremendous amounts of it until the nickel market became volatile. Thanks to the nickel clause, steel companies were raising their prices to whatever they wanted to cover soaring costs. We were seeing spikes of 20, 25 and 30 percent in six months' time."

That led many manufacturers to start weighing their options. One of the grades that surfaced as a suitable alternative was 201. Side by side, you can't tell the difference between the two, says Von Kaenel. It doesn't have as much nickel as 304, but makes up for it in magnesium (which contributes to its corrosion-resistant nature). Both alloys have a high resistance to corrosion and nearly the same amount of chromium.



Chromium is what makes stainless steel stainless by forming a protective layer of chromium oxide on the metal's surface. There are well over 150 different grades of stainless used in a number of industries but the most common in foodservice are 201, 301, 304, 316 and 430. Often referred to as 18/8 because of its composition—18 percent chromium and 8 percent nickel—304 is the grade of choice in E&S because of its durability and corrosion-resistant properties.

"For as long as I've been in the industry, 304 has been the consultant's stainless," says Von Kaenel, who still recalls when consultants would show up on the jobsite with a magnet in hand to make sure they were getting 304 stainless— and not 430. "On the whole, our industry is very slow to accept change, so when 430 came into the marketplace, it was very controversial," he says. "While acceptable in several applications, it is susceptible to staining over a period of time and they were starting to have problems with it in certain environments. Salt really affects the 400-series stainless and it will eventually turn it black."

That's because type 430 is an iron-chromium alloy. It's also magnetic, "which doesn't make it bad," says Alderman, "just different."

Stainless in the 400 series belong to the ferritic family. They contain little or no nickel, and are not as durable as austenitic grades like 304 and 201—or as resistant to acids, bleach and improper care. But they do contain chromium and other corrosion-resistant properties in smaller amounts, which makes them a decent choice for mildly corrosive environments, according to Von Kaenel. "A lot of 430 is used in economical jobs," he says. "But if you're going to sell your customer something that's going to come in contact with a lot of acidic product, upgrade them to a 300-series-grade stainless and tell them why. It costs more, but in the overall scheme of things, it's better."

"Do This and Not That"

It's also important to stress to the end user that just because their two-compartment sink is made of stainless steel doesn't mean it won't stain, scratch or rust. "Essentially it's

like anything else in your kitchen," says Alderman. "The quality of your stainless is only as good as the quality of your care."

Dealers can help by schooling their customers on the do's and don'ts, and according to Alderman, there's plenty of room for improvement. "The biggest cause of rust in a commercial kitchen is operator error and dealers need to do a better job educating their customers," he says.

Different alloys resist corrosion to varying degrees but all are susceptible to mainstays found in a commercial kitchen. Blood from meat products, acidic foods, steel wool, saltwater, petroleum products, and even a metal can left lingering on a tabletop (in a moist environment) can rust stainless steel over a period of time. As for missteps that often lead to callbacks, Alderman's top three are the improper use of bleach (times two), failure to thoroughly rinse product with clean water and completely dry, and the use of steel wool to clean, opposed to stainless wool pads.

"Basically, they're like metal brushes," says Alderman, "and when you use one to clean items in the sink, little particles of steel break off and lodge themselves into microscopic parts of the sink. Over time, the steel rusts and leaves spots. No dealer should ever be selling anything except stainless wool, never steel wool or Brillo pads. And they should be explaining to their customers why they should be buying it."

Bleach and other cleaning products warrant the same level of caution to stave off corrosion. The problem is the average restaurant employee often assumes more is better and fails to follow proper cleaning instructions. Costly offenses include ignoring recommended mixing concentrations, neglecting to rinse with clean water after wiping down equipment and leaving bleach on the surface—with the intent to disinfect. "Regardless of whether it's a vertical surface like an oven or refrigerator or a work table top, bleach and other harsh chemicals should never be left on stainless," says Alderman. "Sooner or later it's going to rust. Type 304 will take longer to stain than 430 but both of them will eventually corrode."

TERMS

YOU SHOULD KNOW

Alloy: A substance that is a mixture of two or more metals, or of a metal with a nonmetallic material. The term alloy is often used interchangeably with grade or type when referring to stainless steel. The most common alloys used in foodservice are 201, 301, 304, 316 and 430.

Austenitic: Non-magnetic stainless steels that contain nickel and chromium sufficient to develop and retain the austenitic phase at room temperature. Austenitic stainless steels are the most widely used category of stainless steel.

Ferritic: Magnetic stainless steels that have a low carbon content and contain chromium as the main alloying element, usually between 13 percent and 17 percent. It is the second most widely used stainless steel.

Gauge: The thickness of a certain stainless steel. Each gauge is actually a range of thickness because steel rolling mills have natural fluctuations and tolerances in the product they produce. The lower the number the thicker the metal, so 14-gauge stainless would be thicker than 18-gauge.

Galvanized: Steel coated with a thin layer of zinc to provide corrosion resistance. In foodservice, galvanized steel is often used for structural support or in hidden areas (such as inside the guts of a refrigerator). It is much less expensive than stainless steel and thus attractive to end users.

Martensitic: A small category of magnetic stainless steels typically containing 12 percent chromium, a moderate level of carbon, and a very low level of nickel.

Stainless Steel: Corrosion-resistant steel of a wide variety but always containing a high percentage of chromium. (The composition needs to contain at least 10.5 percent to be a stainless steel.) Some standard grades of stainless steel also have 3.5 to 22 percent of nickel, which further increases resistance to chemical and atmospheric corrosion.

Another common practice that leads to marring stainless is the use of ill-advised cleaning products or neglecting to wipe down fixtures routinely sprayed during mopping.

“One of the things I always caution dealers about is cleaning tile with muriatic acid,” says Von Kaenel. “It’s really bad for stainless steel. Our utility distribution systems sit on the floor so I often get calls about our stainless turning black. One of the first questions I ask is what floor cleaner do you use.”

Alderman fields several of those calls as well—except his are regarding rust spots on the bottom 12 inches of work table legs. “The concentration they mop the floors with is just as important as the concentration they use to clean the dishes with,” he says. “More is not always better.”

For more information on equipment care and maintenance, both NAFEM and the Specialty Steel Industry of North America offer handbooks on the subject. See the following links:

- www.nafem.org/information-resources/pdfs/care/stainlesssteelfinal.pdf
- www.ssina.com/download_a_file/cleaning.pdf



Common Stainless Steel Alloys Found In Foodservice

304

An Austenitic Steel

Often called 18/8 in relation to flatware, Type 304 is one of the most commonly used grades of stainless steel in foodservice and also one of the more expensive. It is generally composed of chromium (18 percent), nickel (8 percent) and manganese. It is also nonmagnetic and has excellent corrosion resistance. Because of this, it is often used in sink bowls and other areas that routinely come in contact with corrosive-prone materials.

201

An Austenitic Steel

Type 201 is very similar to 304 stainless in chemical composition and corrosion resistance while being somewhat less costly. While it contains less nickel (4 percent), it has almost as much chromium as 304 (16-18 percent) and contains manganese, which provides corrosion resistance. Type 201 was the subject of an article in The Foodservice Consultant magazine a number of years ago suggesting its acceptance in the trade.

316

A Ferritic Steel

Specified for equipment in the medical industry, Type 316 is rarely used in foodservice except for very special, highly corrosive applications. It, too, has about as much chromium as type 304, but more nickel (10-14 percent). It is quite expensive and much more difficult to work with for a fabricator.

430

An Austenitic Steel

Type 430 contains no nickel but has good corrosion resistance in mildly corrosive environments, thanks to its high levels of chromium (16-18 percent). It is commonly used in low-cost sinks and tables as well as areas less exposed to corrosion, such as oven and refrigerator panels.

A special thanks to Advance Tabco's Al Alderman and Avtec's Eric Von Kaenel for their time and expertise.

EQUIPMENT CHECKLIST

Standard & Custom
Products Available

- ✓ Sinks
- ✓ Work Tables
- ✓ Dishtables
- ✓ Racks & Shelving
- ✓ Floor Troughs & Drains
- ✓ Food Shields
- ✓ Drawers
- ✓ Hot & Cold Food Tables
- ✓ Blender Stations
- ✓ Modular Bar Die System
- ✓ Speed Rails
- ✓ Ice Bins

...and More!

LARGE PRODUCT OFFERING

ADVANCE TABCO® offers an extensive range of stock catalog products in multiple sizes and varied price points.

WHY CUSTOMIZE WHEN YOU CAN STANDARDIZE?

We have standardized your custom designs by combining stock items with a wide range of modifications and accessories.



Hand Sink w/ Soap
& Towel Dispenser



Gas Operated Hot Food Table



Wire Shelving

Demo Table

Fabricated Sink



Combo Ice Bin



Beverage Table



1-800-645-3166 • customer@advancetabco.com • www.advancetabco.com

National Manufacturing & Distribution: Georgia • Tennessee • Texas • Mississippi • New York • South Carolina • Nevada • Kentucky