

# FOOD TECH

## EUROPE

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### GLASSFIBRE GRATING PROVEN SUPERIOR TO METAL GRATING IN FOOD AND BEVERAGE INSTALLATIONS

*The use of glassfibre grating by many modern food and beverage plants in North America has solved a number of problems commonly found in wet, slippery work environments.*

**G**rating and floor plates made of this material are superior to traditional metal materials in five important ways:

- **Corrosion Resistance.** Glassfibre is more corrosion resistant than metal gratings, which rust and fail rapidly in food and beverage processing areas using water, acids, salts and caustics. Stainless steel – the traditional choice metal in wet environments – costs twice as much as glassfibre grating.

- **Anti-Slip Traction.** Compared to ceramic tiles, diamond plate, concrete, metal gratings or composite floors, glassfibre grating provides sure footing to work and walk on. Most industrial flooring surfaces have reasonable anti-slip traction under dry conditions, less so when they become wet. But glassfibre grating still gives excellent footing even in wet areas. This anti-slip factor enhances worker safety and reduces accidents.

- **Ergonomic Benefits.** Glassfibre grating has a slight resiliency that makes it comfortable to stand on for a long time. Work platforms made with glassfibre material reduce leg and back strain, thereby increasing worker comfort and pro-

ductivity. After installing glassfibre platforms, many firms experienced a dramatic decrease in worker fatigue. One supervisor at a meat processing plant says, "We discovered our work platforms were disappearing. People in other parts of the plant were taking them for their own work stations, because they found they were less fatigued at the end of their shift. We solved this by getting more, and colour-coding them for different work areas."

- **Lower Maintenance Costs.** Glassfibre material never needs painting, is easier to cut and fabricate than metals, and weighs one-third the amount of metal gratings. Each of these features reduces long-term maintenance costs.

- **Load-bearing characteristics.** Unlike metal grating, which distributes the load longitudinally along bearing bars only, molded glassfibre grating, such as Chemgrate, is made with integral one-piece construction. This distributes the load to both bearing bars and cross bars. The load applied to each bar is transferred to adjoining cross bars and bearing bars, providing load distribution on the grating as well as on the support structure.

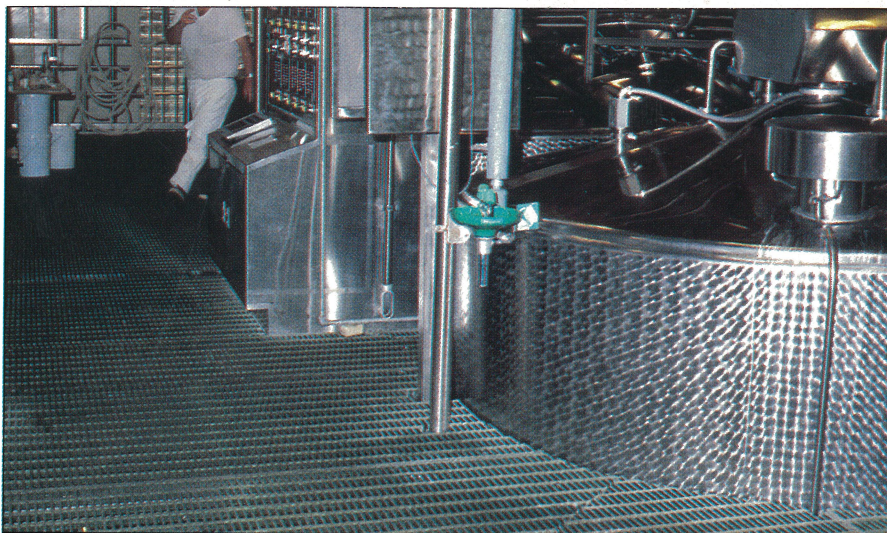
Since the Chemgrate Corp. of Wood-



*This U.S. potato processing plant, with Chemgrate walkways and stairs installed throughout the facility, will virtually be duplicated in Russia as part of a joint venture. It is expected to help improve potato harvesting efficiency, currently estimated at 50%*

inville, Washington, invented anti-slip glassfibre grating with integral grit-top surface in 1969, it's been installed in hundreds of food and beverage processing plants in the United States, Canada and Mexico. A leader in the manufacturing of glassfibre grating, the company's





*Grating is easily cut to fit around tanks, pipes and other machinery in this dairy processing facility. Simple hand tools do the cutting; no welding is required*

Chemtred stair product has been awarded "Product of the Year" by the American Society of Plastic Engineers.

## What is the Cost of a Product?

As we discuss in depth the four main benefits of glassfibre grating, potential buyers should consider new ways to evaluate the cost of flooring and grating surfaces at food and beverage plants. Most of us are familiar with the children's fable "The Three Little Pigs": the pig using cheap, flimsy material (straw) had the shortest service life for his structure, while the pig using better, more expensive material (brick) realised the safest and longest service life for his structure. Remember the "Three Little Pigs" analogy when evaluating the cost of grating and flooring materials.

Food and beverage plants should always consider the safety cost of flooring and grating surfaces when selecting materials. According to the U.S. National Safety Council, slip and fall accidents are the second leading cause of lost work-days. On average, 1 in 6 worker's compensation claims in the U.S. is fall related, and the cost of such injuries is very high. It follows that anti-slip surfaces which reduce slip and fall accidents also reduce costs associated from those mishaps. Tests conducted at the University of Michigan's Ergonomics Laboratory determined that Chemgrate's integral anti-slip surface dramatically reduces accidental slips and falls, because it has a high Coefficient of Friction (COF) value.

To be safe, normal walking requires a static COF of 0.36. Working conditions



*Glassfibre stair treads (Chemtred) combine with walkways to provide both sanitation and safety. Similar pedestals and supports expedite clean-in-place sanitation procedures. The stairs and walkways will not rust, corrode or ever need painting*

require a much higher static COF due to the variety of movements, load shifting, and pulling/pushing actions associated with working. Therefore, a safe working static COF must generally exceed 0.7.

Concrete, diamond plate and metal gratings each exceed the static COF of 0.7 for work areas – but only when they are dry! When they are wet, the static COF for each material drops below 0.7. By comparison, Chemgrate's plate product (Chemplate) product has a static COF of 1.2 when dry, and 1.0 when wet.

The tests demonstrated that glassfibre

performed better than alternatives under laboratory conditions. But what about in the field, in actual work environments? Glassfibre grating does even better than the others under actual working conditions. Why is this so? Alternative surfaces offer good initial anti-slip properties, but after time and use, they lose their traction and gripping surface. That is because secondary bonding of an anti-slip finish to other glassfibre gratings, aluminium, or steel has a comparatively short service life. Glued-on grit is restricted to a smaller aggregate size that erodes over time.

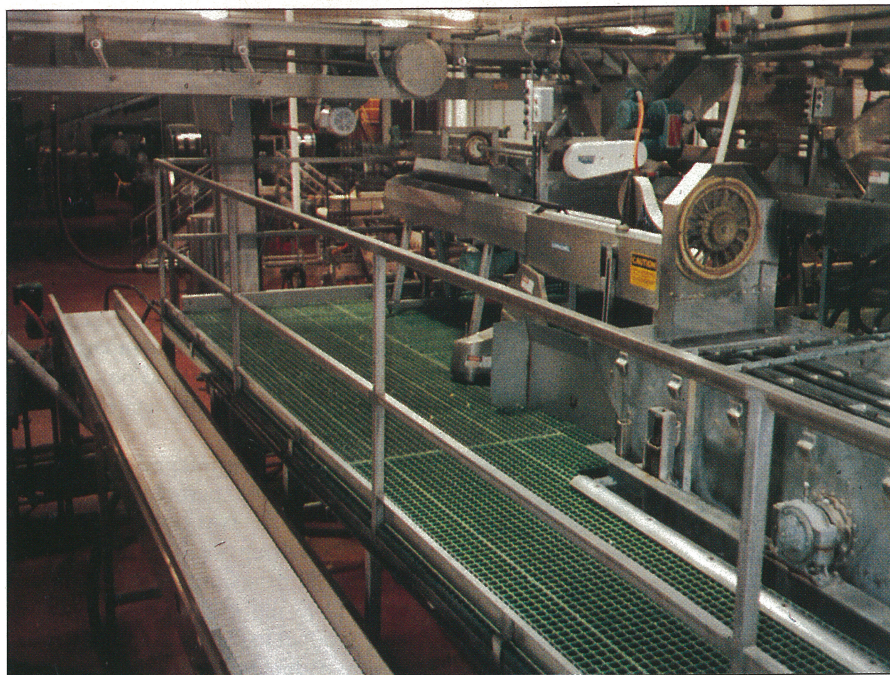
By comparison, an integral grit top surface – in which silica particles are embedded into the upper portion of each panel before oven-curing – provides a longer-lasting anti-slip surface. The grit surface isn't glued to the grating – it's cooked into the product itself. In fact, Chemgrate glassfibre floor grating was originally developed to replace metal flooring in a food processing plant because management was worried about workers falling on slippery metal. In addition, safety studies show that numerous industrial accidents occur on and around stairways, so Chemgrate offers a variety of products that can be used as stairways, catwalks and trench covers. One dairy plant foreman reports, "Chemgrate wears out our rubber boots, but we don't slip on it, and we like standing on it."

The most important factor to consider when evaluating grating and flooring



*In meat processing facilities, the glassfibre work platforms help alleviate leg and back strain or workers who stand in one place for long periods of time*





*Glassfibre grating provides safe, easily-cleaned walkways around processing machinery. Debris falls through holes to sub-floor for washing or sweeping*

material is the total or life cycle cost of the product. In corrosive environments using acids, salts, water or caustics, metal grating will deteriorate in a few years. Molded glassfibre grating, such as Chemgrate, will typically last three or more times longer than metal grating. Combined with the reduction in accidents, this factor often makes moulded glassfibre grating the lowest-cost option. When asked as to how long glassfibre grating will withstand corrosion, the typical tongue-in-cheek answer from Chemgrate is: "We don't know. We've only been making it since 1969."

Why is moulded glassfibre grating so corrosion-resistant? Because of its ingredients, and how they are combined. Other manufacturers of glassfibre grating add fillers such as aluminium tri-oxide which weaken grating material and make it susceptible to corrosive agents. Chemgrate does not use fillers. The company's glassfibre material is composed of continuous glassfibre strands (35% of product weight) that are thoroughly wetted with resin (65% of product weight) between each strand. Remember the analogy of the little pig who made his house with brick? It is as though Chemgrate uses the very best brick (no fillers) and the very best mortaring method, by applying resins between each glassfibre strand. In addition to excellent corrosion resistance, this manufacturing process provides good load-bearing characteristics. Loads applied on the grating are distrib-

uted both to bearing bars and cross bars, not just one or the other.

Another important factor to consider when calculating the price of grating products is the installed cost. Chemgrate is often less expensive initially than metal grating when installation costs are factored into the total price. Installers can use hand tools to cut and fabricate glassfibre material. No expensive welding or torch cutting is required. A typical glassfibre panel is light enough (one-third the weight of steel) for two workers to handle, which means that mechanical lifts or hoists aren't necessary. Also, pedestal-supported grating installs easily over tile floors. Among the millions of square meters of Chemgrate glassfibre grating installed in North American food and beverage plants, you will find trench covers, catwalks, stairways and landings, portable work platforms, and stationary platforms on bottling, packaging and production lines.

The final factor to consider when installing grating materials is their maintenance cost. Glassfibre grating such as Chemgrate never needs to be painted. Workers can easily lift lightweight glassfibre grating when access is required to pumps, valves, or other industrial equipment usually covered by gratings. A service technician who wants to work on a piece of equipment, does not have to find two or three co-workers to help remove and replace heavy metal gratings. In addition, Chemgrate's resin rich surface

resists food buildup and inhibits bacterial growth. Tapered grating design allows food debris to fall through its holes into troughs or drains, so that glassfibre grating cleans easily. Chemgrate glassfibre grating has earned United States Department of Agriculture (USDA) acceptance for incidental food contact in food and beverage processing facilities.

### Use of Glassfibre Grating in Europe

Recently, European food and beverage processors are beginning to realise the benefits of Chemgrate. For example, a potato-processing equipment manufacturer based in Colorado, U.S.A., is engaged in a joint venture with a 20,000-acre Russian potato farm. As part of the deal, the Colorado manufacturer is building a turn-key potato processing plant, located in Russia, and is using grating and stair treads supplied by Chemgrate throughout the production centre. Also, Scandinavian fishing companies have successfully used Chemgrate grating to replace slippery metal on board their seafood processing vessels. Many food processing firms have selected Chemgrate grating and flooring as a superior replacement to metal grating for both economic and social reasons.

Also, brew pubs in the United Kingdom are presently using Chemgrate for trench and drain covers, as well as Chemplate floor plate for wet stairs and floors.

### Summary

Use of glassfibre grating and flooring materials saves money at food and beverage plants. Corrosion-resistant glassfibre grating lasts much longer than metal grating materials, so it does not need replacing every two or three years. Glassfibre grating enhances worker safety by reducing slip and fall accidents. Workers like glassfibre grating because of the ergonomic benefits found in its slight resiliency, which reduces leg and back strain. Finally, glassfibre grating such as Chemgrate is easier to use, install and maintain than metal gratings, which helps to reduce long-term maintenance costs.

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