

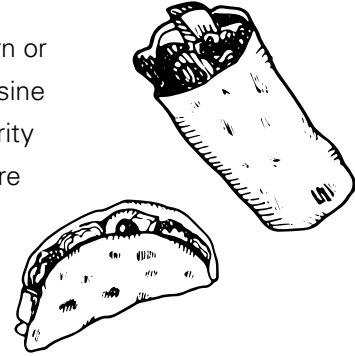
A WORLD OF **TORTILLA SOLUTIONS**

for Today's Growing Marketplace



TODAY'S TORTILLA LANDSCAPE

Tortillas—those versatile and delicious flatbread rounds prepared with corn or wheat flour—have been a staple food and key component in Mexican cuisine for generations. Now a staple in U.S. cuisine, tortillas are enjoying popularity in a wide variety of offerings, from traditional Mexican dishes to newer fare including wraps and snacks.



Tortillas by the numbers

- ▶ **93.756 million** consumers buy tortilla products on a weekly basis.¹
- ▶ **70%** of global tortilla sales take place on the American continent.²

In 2018,

- ▶ There were **234.39 million** tortilla consumers in the U.S.³
- ▶ **122.48 million** people in the U.S. consumed one to eight or more bags of tortilla products per month.⁴
- ▶ Volume of the U.S. tortilla market was **3.6 million** pounds.⁵
- ▶ **Eight of the top 10** brands saw positive growth.⁶
- ▶ Hard/soft tortillas and taco kits sales were up **3.05%**, with **\$2.46 billion** in sales.⁷

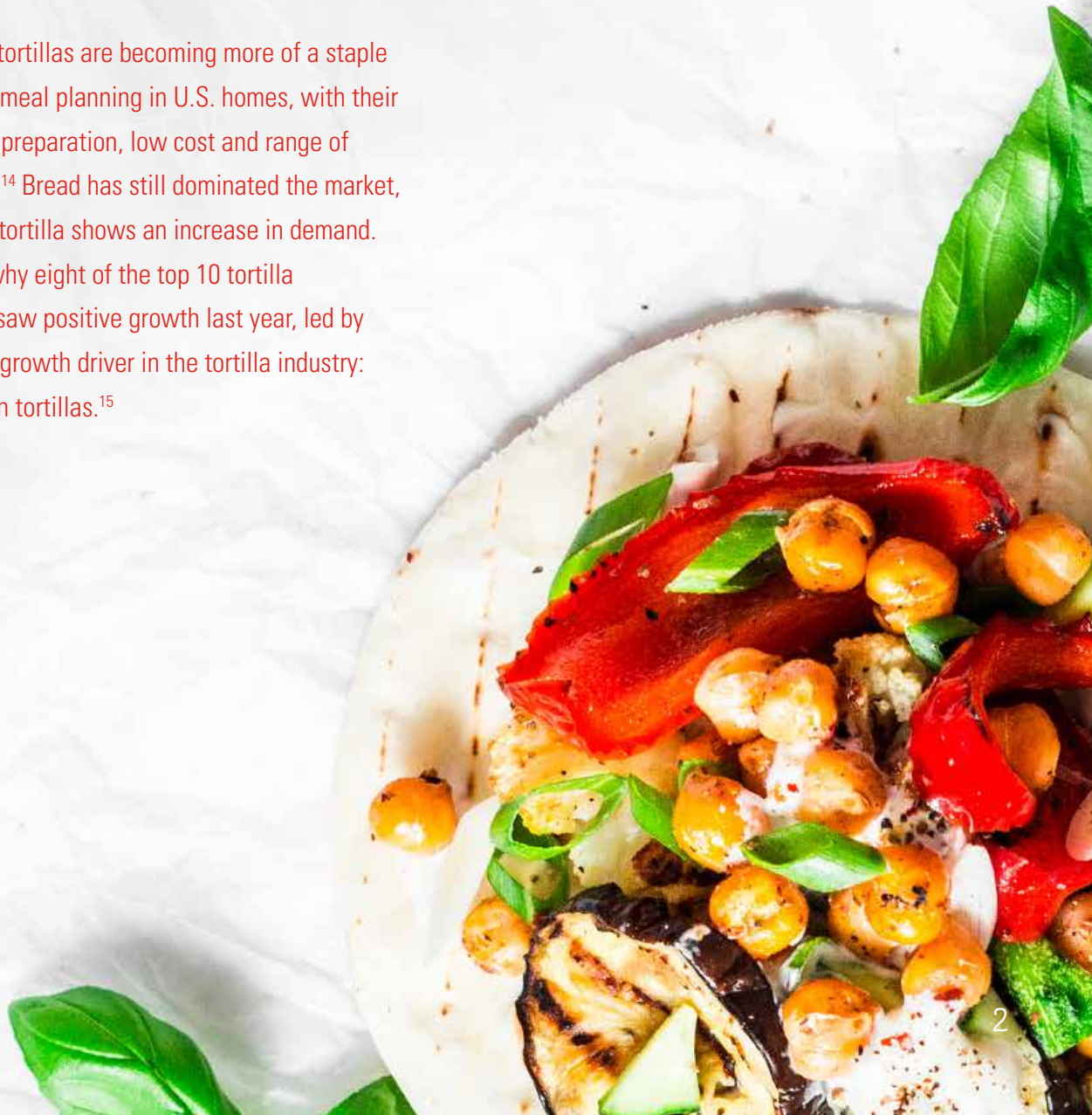
It's clear that U.S. consumers love their tortillas, with the U.S. tortilla production industry reaching \$5 billion revenue in 2018.⁸ In addition, the global tortilla market is projected to reach USD 48.51 billion by 2023 at a growth rate of 5.10%⁹ and strong growth is projected for tortillas over next decade.¹⁰

What's feeding this predicted increased tortilla consumption?

There are several contributing factors:

1. Population growth including the growing number of Hispanic consumers and their subsequent buying power¹¹
2. Upward-trending consumer tortilla consumption¹²
3. The challenges of busy lifestyles and an increasingly urban working population looking for convenience they find in tortillas¹³

In fact, tortillas are becoming more of a staple in daily meal planning in U.S. homes, with their ease of preparation, low cost and range of options.¹⁴ Bread has still dominated the market, but the tortilla shows an increase in demand. That's why eight of the top 10 tortilla brands saw positive growth last year, led by the key growth driver in the tortilla industry: soft corn tortillas.¹⁵



*What's another important factor driving the tortilla market?
The rising demand for healthy foods among consumers.¹⁶*

HEALTH

Consumers are increasingly concerned with their health and looking for better-for-you options in their diets, another factor feeding demand and boosting the growth of the tortilla market.¹⁷ These health-conscious consumers have an awareness about the health benefits associated with the consumption of healthy and natural food products,¹⁸ which in turn is helping to drive a steady rise in tortilla sales, as manufacturers work to meet diverse dietary demands.¹⁹ Tortillas are considered a nutritious alternative and a potential replacer for bread, increasing their applications in the food industry.²⁰ Corn tortillas are rich in vitamin B constituents, especially thiamin and niacin, while wheat tortillas are rich in essential minerals, calcium, magnesium, and many more.²¹ You could say that this year's tortilla segment buzzword was 'healthy.'²²

THE INNOVATION CYCLE

Tortilla manufacturers' continuous efforts to bring innovative products such as new, flavored offerings to the marketplace is another factor driving growth²³ and boosting the tortilla market.²⁴ Now tortilla manufacturers have expanded their product lines beyond simple flour and corn varieties to produce varieties that have continued to drive revenues upwards,²⁵ including:

- organic
- low carb
- non-GMO
- gluten-free
- wheat-free
- whole grain
- vegetable-based alternatives

Also, a consistent reduction in the size of tortillas over the last few years²⁶ has aligned well with the consumption of smaller food portions, and consumers' tendency to incorporate more variety with smaller tortillas, rather than large portions of a single dish.²⁷



FREQUENCY OF PURCHASE AND CONSUMPTION

More than 40 percent of consumers buy tortilla products on a weekly basis.²⁸

So, what are they buying and why?

FLOUR TORTILLAS:

43% of market share²⁹

Flour tortillas by type:

White flour (press): \$11.8 b

White flour (hand stretch): \$278 m

White flour (die cut): \$417 m

Whole wheat (press): \$1,389 m

CORN TORTILLAS:

42% of market share³⁰

Corn tortillas by type:

Masa (white corn): \$6,251 m

Masa (yellow corn): \$694 m

Cooked (white corn): \$4,167 m

Cooked (yellow corn): \$2,778 m

Though soft wheat tortillas have sold more than soft corn tortillas previously, the key driver in the industry are soft corn tortillas with a 2% CAGR over the last 5 years.³¹

Consumers may prefer more convenient, healthier foods like tortillas due to their busy lifestyles and growing health concerns:

- ▶ 33% prefer healthier snacks like tortillas that have fewer health impacts.³²
- ▶ over 40% of U.S. consumers buy their tortilla products in hypermarkets and supermarkets on a weekly basis due to their busy schedules and easy availability.³³

Consumers' growing health-consciousness has also spurred tortilla consumption, with consumers considering tortillas' nutritional value, especially that provided by vitamin B3 and fiber, to be useful.³⁴ Consumers also consider tortillas label-friendly, since they contain recognizable ingredients such as corn or wheat, salt, vegetable oil, and water.³⁵ Even better for today's wellness focused consumers? Tortillas can be a good source of fiber and are also available in gluten-free varieties, giving them a nutritional advantage that has increased the rate of consumption among U.S. consumers.³⁶

WHAT ARE CONSUMERS' PREFERENCES WHEN IT COMES TO TORTILLAS?

Families are finding it harder to manage work and home life and are looking for quicker easier ways to feed their families, hence the fast-growing trend for healthier, sustainable and fresh products. Tortilla consumers are looking for a healthier, organic, authentic taste experience. Overall, ancient grains, gluten free, lower net carbohydrates, and lower fat content are some the fastest growing trends in the tortilla industry.³⁷

Consumers' tortilla preferences can be broken down into these three key drivers:

INGREDIENTS

Healthier whole grain, and reduced-fat tortilla alternatives are in demand,³⁸ and there is a growing interest in healthy, flavorful alternatives to standard tortillas, such as sweet potato, cassava, coconut, and even hemp.^{39,40}

FLAVORS

There's a growing demand from millennials who want and look for new and innovative products with exotic ingredients and flavors.⁴¹ Tortilla manufacturers have expanded their product lines beyond simple flour and corn varieties to produce whole grain and vegetable-based alternatives,⁴² along with novelty innovations such as soft corn tortillas flavored with red chili, cactus, jalapeno, and blue cheese.⁴³

LABEL CLAIMS

Consumers prefer products with a clean label, and are looking for label claims such as vegan, organic and non-GMO project verified.⁴⁴ Purchase drivers for general tortilla labels include cleaner labels, organic content, non-GMO content, and ancient grains, while the purchase drivers for soft corn tortilla labels have been gluten free, less sodium and whole grain.⁴⁵

Organic and natural

Organic-certified tortillas are anticipated to grow at a rate of 4.1% revenue in the global tortilla market, "...owing to increasing awareness of organic certification and their associated quality by consumers across the globe."⁴⁶ This growing demand follows consumer desire for clean and simple ingredients, as well as labels they can read and understand.⁴⁷ In fact, In the United States, 45% of families want to eat organic and natural products because they consider them safer.⁴⁸

Gluten free

Sales based on a gluten free claim are expected to grow at a CAGR of 6.20%,⁴⁹ and consumers with gluten sensitivity enjoy the availability of corn tortillas as gluten free meal and snack options.⁵⁰

Low carb

Tortilla makers have introduced low carb and high fiber tortillas to better meet consumer demands for a healthier product,⁵¹ and a low-carb claim is second only to a gluten free claim.⁵²



CHALLENGES FACING TORTILLA MANUFACTURERS

Tortilla manufacturers face a host of challenges and concerns including food safety and shelf life, texture and appearance, processing, consumer appeal and more.

Tortilla manufacturing concerns

SHELF LIFE EXTENSION

Microbial Stability

- Mold inhibition
- Food safety

Texture and Appearance

Texture

- Extensibility, Reliability, Flexibility
- Staling
- Zippering
- Stickiness
- Ease of separation
- Stack height

Appearance

- Toast point
- Translucent/Opaque
- Uniform roundness
- Size conformity
- No cracking edges

OPERATIONAL

Processing

- Dough development, characteristics and tolerance
- Machinability and gluten development
- Mixing time

Logistics

- Precision weighing of micro ingredients
- Consistency between batches
- Inventory management and storage of raw materials
- Labor costs
- Storage logistics

CONSUMER APPEAL

- Product quality
- Appealing texture and mouthfeel
- Consistency
- Label claims

Solutions to tortilla manufacturing challenges

Kemin offers a complete suite of solutions—including complete drop-in solutions and premixes, liquid and dry solutions—and the tortilla-specific expertise to help tortilla manufacturers deliver better tasting, better performing and longer lasting tortillas.

MOLD INHIBITORS

Industry-leading line of liquid and dry mold inhibitors, propionic acid-based synergistic blends that control microbes, preventing spoilage and mold growth in tortillas. Label-friendly solutions are also available to help meet consumer demand for clean labels.

COMPLETE DROP-IN SOLUTIONS

Contain blends of several functional ingredients that each contribute quality characteristics and solve manufacturer's challenges, including:

- ▶ Raw material inventory management
- ▶ New ingredient updates with optimized pricing
- ▶ Proper order of addition for each ingredient
- ▶ Precisely measured ingredient quantities
- ▶ In-depth critical analysis of each batch
- ▶ Up-to-date compliance with most regulatory changes
- ▶ Continuous improvement due to in-house R&D support

ENZYME, EMULSIFIER AND GUM BLENDS

With functional minor/micro ingredient solutions for leavening, softening and preservation of tortillas.



A WORLD OF **TORTILLA SOLUTIONS**
FOR TODAY'S GROWING MARKETPLACE

THE SUITE OF TORTILLA SOLUTIONS

Challenge	complete drop-in solutions	enzyme, emulsifier & gum blends	mold inhibitors
SHELF LIFE EXTENSION			
Microbial Stability Mold inhibition and food safety	✓		✓
Texture and Appearance Reliability, flexibility, staling, cracking edges, zippering, stickiness	✓	✓	
OPERATIONAL CONCERNS			
Processing Optimal dough development and mixing time with dough strengtheners and reducing agents	✓	✓	
Logistics Efficiencies including inventory management of functional ingredients space, FIFO and storage of raw materials; labor costs; batch-to-batch consistency	✓	✓	
Consumer Appeal Quality, consistency, label claims	✓	✓	✓



TORTILLA SOLUTIONS AND EXPERTISE

Not only do these tortilla solutions answer safety, textural, and processing challenges, they can also help tortilla manufacturers meet label claim goals. Kemin offers cleaner label, non-GMO and a wide variety of naturally sourced options that coincide with the consumer demand for and growth of organic and non-GMO project verified tortilla varieties⁵³ as the tortilla industry has continued to strive for cleaner labels.⁵⁴

The team at Kemin understands tortilla formulation, shelf life and operational challenges, from lab bench to store shelf. The team helps protect tortilla brands and assists in accelerating their new products' speed-to-market utilizing these resources:

- ▶ **GFSI-certified plant**
- ▶ **State-of-the-art R&D infrastructure** featuring in-house experts with in-depth knowledge of ingredient functionality and processing parameters
- ▶ **In-house Tortilla Pilot Plant** bridging the gap between laboratory-scale development and commercial production
 - Texture profile analyzer
 - Flour analysis through dough lab
 - Microbial characterization at in-house facility
- ▶ **Critical analysis of each batch** through advance analytical instruments such as HPLC to quantify preservatives at ppm levels



In short, Kemin can help tortilla manufacturers with a customizable suite of functional ingredients, technical expertise, production experience and value-added services, to:

- ▶ Align with industry guidelines, regulatory changes and ingredient innovations
- ▶ Get just what they need, from specific problem-solving ingredients for a formulation or a complete drop-in solution designed to support product goals
- ▶ Reduce complexity of purchasing, quality and logistics with complete drop-in solutions meant to provide consistent quality for every batch of tortillas
- ▶ Ensure the safety, freshness and consumer appeal of flour and corn tortilla products, with a complete mold inhibition suite of solutions

A TORTILLA SUCCESS STORY

Helping customers with their shelf life issues.

A Kemin customer wanted to improve the shelf life of their premium authentic tortillas. First, the Kemin team started out by performing a thorough analysis on the customer's masa flours and their tortillas. Then, the Kemin Product Application Department installed a new dosing system to ensure even distribution and increase the consistency of application. Desirable results were achieved, and routine analysis has continued. The result? In the following 18 months, the customer has experienced no shelf life issues in their tortillas.



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