IBISWorld

WHERE KNOWLEDGE IS POWER

Catching fire: Rising construction activity will spark demand for industry products

IBISWorld Industry Report OD5062

Fire Extinguisher Manufacturing in the US

September 2018

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About this Industry

Industry Definition

This industry manufactures fixed fire suppression systems and hand-portable fire extinguishers used to control small fires, often in emergency situations. Additionally, this industry manufacturers replacement parts and equipment associated with fire suppression systems and extinguishers. The industry excludes other professional fire equipment used by firefighters.

Main Activities

The primary activities of this industry are

- Manufacturing portable dry chemical fire extinguishers
- Manufacturing portable carbon dioxide fire extinguishers
- Manufacturing other portable fire extinguishers, such as wet chemical, foam and water mist extinguishers
- Manufacturing dry chemical fixed fire suppression systems
- Manufacturing wet chemical fixed fire suppression systems
- Manufacturing replacement parts, components and equipment for fire suppression systems and extinguishers

The major products and services in this industry are

- Carbon dioxide fire extinguishers
- Clean agent fire extinguishers
- Stored pressure fire extinguishers
- Other extinguishers and parts

Similar Industries

32512 Oxygen & Hydrogen Gas Manufacturing in the US
Establishments in this industry produce gases, such as nitrogen, which is used as a propellant in multi-purpose dry chemical portable extinguishers.

32599 Chemical Product Manufacturing in the US
Establishments in this industry make preparations, such as monoammonium phosphate, sodium and potassium bicarbonate, used for extinguishing fires.

42384 Industrial Supplies Wholesaling in the US
Establishments in this industry distribute fire extinguishers to manufacturing and warehousing industries.

44411 Home Improvement Stores in the US
Establishments in this industry commonly sell portable fire extinguishers.

About this Industry

Additional Resources

For additional information on this industry

www.femalifesafety.org
Fire Equipment Manufacturers' Association

www.nafed.org
National Association of Fire Equipment Distributors

www.nfpa.org
National Fire Protection Association

www.osha.gov
Occupational Safety and Health Administration

www.census.gov
US Census Bureau

Industry at a Glance

Fire Extinguisher Manufacturing in 2018

Key Statistics Snapshot

Revenue	Annual Growth 13–18	Annual Growth 18–23	
$1.2bn	-1.1%	2.0%	
Profit	Exports	Businesses	
$80.6m	$196.5m	21	

Market Share

Amerex Corporation 11.6%

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Key External Drivers

- Value of private nonresidential construction
- Value of residential construction
- Industrial production index
- Trade-weighted index
- Demand from transportation and warehousing

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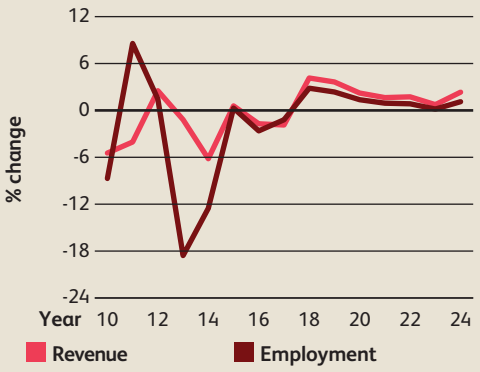
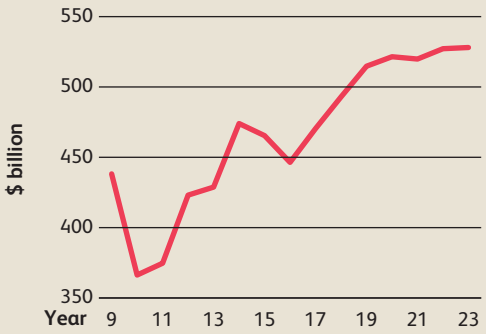
Revenue vs. employment growth

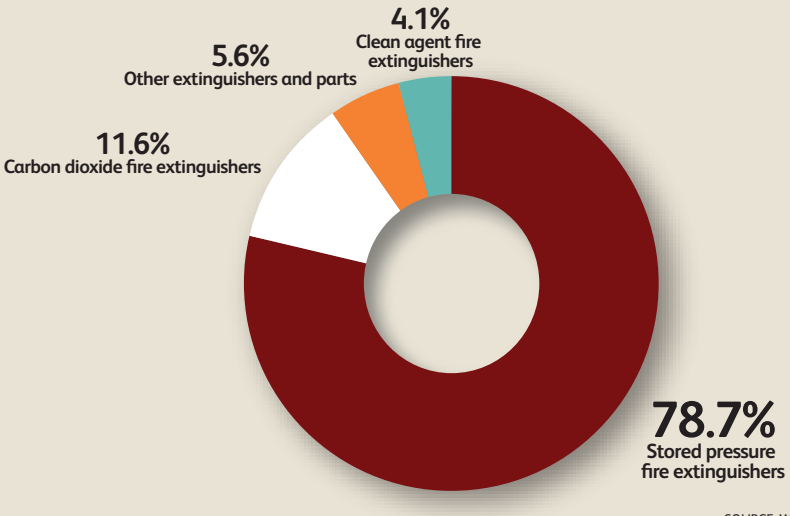


Value of private nonresidential construction



SOURCE: WWW.IBISWORLD.COM

Products and services segmentation (2018)



SOURCE: WWW.IBISWORLD.COM

Industry Structure

Life Cycle Stage	Mature	Regulation Level	Medium
Revenue Volatility	Medium	Technology Change	Low
Capital Intensity	Medium	Barriers to Entry	Low
Industry Assistance	Low	Industry Globalization	Medium
Concentration Level	Medium	Competition Level	Low

FOR ADDITIONAL STATISTICS AND TIME SERIES SEE THE APPENDIX ON PAGE 36

Industry Performance

Executive Summary

The Fire Extinguisher Manufacturing industry has struggled over the five years to 2018. Regulations mandating installation of fixed suppression systems, as well as the placement of portable fire extinguishers in workplaces, factories and other establishments, provide a baseline of demand for industry products. As a result, the construction of new private, public, commercial and residential structures generally translates into higher industry sales; however manufacturers compete with international rivals when the US dollar is strong. Robust performance in the domestic construction and industrial sectors, coupled with a rising US dollar, have made internationally manufactured goods cheaper, stimulating imports and denting industry growth.

A rising US dollar has helped to make internationally manufactured goods cheaper, stimulating imports

Industry imports spiked 8.0% in 2017, with industry revenue declining 1.9% the same year. However, an increase in industrial activity over the past five years has boosted demand for fixed fire suppression systems designed for factories and extinguishers that are commonly found on freight vehicles, such as ships and trains. Consequently, revenue for the Fire Extinguisher Manufacturing industry is expected to decrease only slightly, at an annualized rate of 1.1%, to $1.2 billion over the five years to 2018, despite projected growth of 4.1% in 2018.

Fixed fire suppression systems and portable fire extinguishers, the industry's primary products, are intended for use as a first line of defense against small fires. As a result, the National Fire Protection Association has developed standards that apply to the selection, installation, inspection, maintenance and testing of wet and dry chemical suppression systems and portable extinguishing equipment. Based on these and other standards, OSHA (the Occupational Safety and Health Administration) places requirements on employers regarding the proper placement and maintenance of fire-extinguishing equipment. Regulations also exist at the regional level, administered by state and local governments.

Industry revenue growth is expected to reignite over five years to 2023, increasing at an annualized rate of 2.0% to $1.3 billion. Continued expansion in the Construction sector (IBISWorld report 23) will help drive industry demand, while a decreasing trade-weighted index means exports are forecast to return to stable growth. In addition, new and increasing regulations mandating the presence of fire equipment, coupled with rising export demand, will also continue to support sales of industry products.

Key External Drivers

Value of private nonresidential construction

The value of private nonresidential construction is the Bureau of Economic Analysis's measurement of private expenditures on office buildings, hospitals, factories, power plants, mining shafts, communication lines, farms, railroads and schools. Because most of these sites require the placement of fire extinguishers, new structures or spending on commercial structures generally increases demand for industry product. The value of private nonresidential construction is expected to increase in 2018.

Value of residential construction

Demand for fire extinguishers is strongly correlated with new residential

Industry Performance

Key External Drivers continued

construction, including single-family units and multifamily establishments (e.g. apartment buildings). Regulations requiring the placement of fire equipment in multifamily establishments and general population safety concerns bolster demand for fire extinguishers when new residential homes and buildings are constructed. The value of residential construction is expected to increase in 2018, representing a potential opportunity for the industry.

Industrial production index

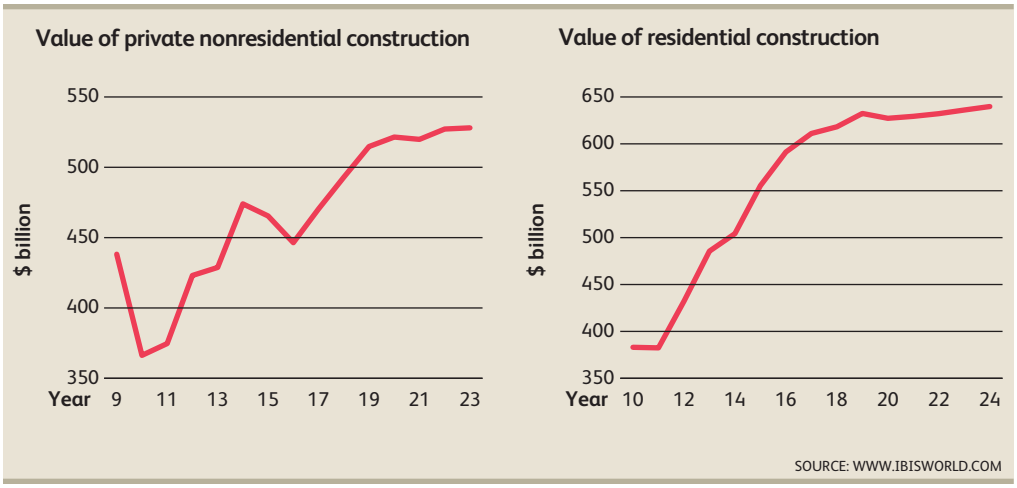
The industrial production index (IPI) measures the output from the mining, manufacturing, electric and gas sectors. Industrial facilities represent elevated risk for liquid, electrical equipment and combustible metals fires (fire classes B, C and D, respectively). Thus, regulations exist regarding the placement of fire extinguishers in most establishments within these industries. In general, as industrial production increases, so does demand for portable fire extinguishers. The IPI is expected to increase in 2018.

Trade-weighted index

The trade-weighted index (TWI) reflects the relative value of the US dollar against the currencies of the country's major trading partners. As the TWI strengthens, exports of portable fire extinguishers become relatively more expensive and less attractive to customers overseas. Therefore, an increasing TWI can negatively affect the Fire Extinguishing Manufacturing industry. The TWI is expected to decline in 2018; however, recent increases and future uncertainty still pose a threat to the industry.

Demand from transportation and warehousing

Regulations exist requiring the placement of fire extinguishers within transport vehicles, such as buses, trains, freight trucks and ships. As demand for transportation and warehousing increases, more vehicles are purchased or put into use, creating demand for fire extinguishers. Demand from transportation and warehousing is expected to increase in 2018.

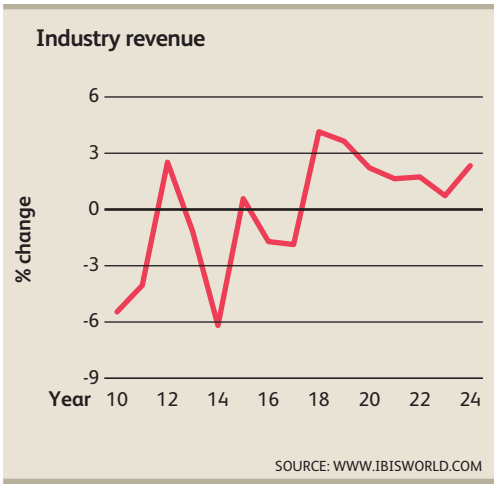


SOURCE: WWW.IBISWORLD.COM

Industry Performance

Current Performance

Over the past five years, a rebound in home and commercial construction, coupled with an increase in industrial production levels, stoked the flames of the domestic Fire Extinguisher Manufacturing industry. Regulations mandating the installment of fire suppression systems in hazardous areas, as well as the placement and accessibility of fire extinguishers in workplaces, schools, factories, residential buildings and other establishments, help provide a basis of support for industry demand. Therefore, when more structures are built, sales of portable fire extinguishers grow and industry revenue improves. Moreover, the industry benefited from an increase in travel and commercial transportation, as portable fire extinguishers are commonly installed in trucks, trains, airports and other vehicles. However, stagnant export demand constrained industry growth, as slower construction and industrial activity in foreign economies limited purchases of industry products. A strong US dollar also increased the appeal of cheaper imported products, and major industry players have increasingly moved their manufacturing facilities abroad to minimize wage costs. As a result, industry revenue is expected to decline an annualized 1.1% to $1.2 billion over the five years to 2018, despite 4.1% projected growth in 2018 alone.



Regulation supports industry growth

Regulations regarding the presence and accessibility of fire-extinguishing equipment were developed over the past century in response to the prevalence of fires and associated damages, injuries and deaths. Established in 1896, the National Fire Protection Association (NFPA) prepares, publishes and distributes more than 300 consensus codes and standards intended to minimize the possibility and effects of fires and other related risks. Nearly every building, process, service, design and installation in the country is affected by NFPA documents. According to the NFPA, in 2016 (latest available data), US fire departments responded to more than 1.3 million fires. These fires resulted in 3,390 civilian deaths, 14,650 civilian injuries and $10.6 billion in property damage. Codes and regulations seek to contain fires, limit the number of fires requiring attention by fire departments and reduce the number of fire-related deaths, injuries and property damages.

Engineered fire suppression systems provide site-specific protection at the earliest stage of a fire and are commonly installed in potentially hazardous areas, such as data processing rooms, factories and commercial kitchens. These integrated systems include an automatic control and fire detection sensors. When triggered, these sensors activate the suppression system, which floods a designated area with a wet or dry chemical extinguishing agent. This industry also manufactures portable fire extinguishers, which are used as a first line of defense to cope with small fires. According to the NFPA, when used properly, fire extinguishers can save lives and property by extinguishing small fires or by controlling fires until additional help arrives.

Industry Performance

Regulation supports industry growth continued

As a result, the NFPA has developed standards that apply to the selection, installation, inspection, maintenance and testing of fixed suppression systems and portable extinguishing equipment. Based on these and other standards, OSHA (the Occupational Safety and Health Administration) sets requirements for employers regarding the proper placement and maintenance of fire-extinguishing equipment. OSHA requires that employers provide their workers with an educational program to familiarize them with the general principles of fire extinguisher use and the hazards involved in incipient-stage firefighting. Regulations also exist at the regional level, administered by state and local governments. Although few national regulations have been introduced in recent years, ongoing requirements placed on employers and housing managers have facilitated sustained demand in some markets, contributing to more-stable demand for industry products.

Rekindled construction and industrial activity

The industry depends on the health of the US residential construction market. Demand for fixed fire suppression systems is driven by nonresidential construction activity, especially the renovation and construction of restaurants, office buildings and industrial facilities. Similarly, demand for portable fire extinguishers is strongly correlated with the construction of new homes, including single-family units and multifamily establishments (e.g. apartment buildings). Regulations requiring the placement of fire equipment in multifamily establishments and safety concerns for the general population cause demand for fire extinguishers to increase when new residential homes and buildings are constructed.

Fueled by higher employment levels, an increase in per capita disposable income and persistently low interest rates, the housing and commercial construction markets have grown steadily over the past five years. For example, the value of residential construction, the Bureau of Economic Analysis's measure of expenditures on single-family and multifamily structures, increased an annualized 4.7% over the five years to 2018. Commercial construction activity, measured by the value of private nonresidential construction, also picked up during the five-year period as increasing corporate profit lifted demand for new offices, warehouses and manufacturing facilities. Demand from the commercial (i.e. nonresidential) construction sector also has a strong influence on fire manufacturers' performance. As the US economy steadily expanded, businesses opened new offices and factories, resulting in greater demand for fire extinguishers in commercial locations.

Regulations requiring extinguishers in buildings have helped support demand

Industrial activity is another major driver of demand for industry products. As industrial activity grows, demand for fire extinguishers used in manufacturing facilities also increases because company properties and employee numbers grow. Furthermore, greater industrial activity translates into more goods being transported across the globe, thereby raising demand from transport service providers (e.g. freight trucks and planes). Overall, industrial production, as measured by the US Federal

Industry Performance

Rekindled construction and industrial activity continued

Reserve's industrial production index, is expected to increase at an annualized rate of 1.1% over the five years to 2018.

Export revenue declines

In 2018, exports of portable fire extinguishers are expected to account for 16.3% of industry revenue. Exports are projected to stagnate (0.0% annualized growth over the past five years) at $196.5 million. Industry exports were tempered by a strengthening US dollar until late 2016, which made domestically produced fire extinguishers and equipment more expensive and less competitive in overseas markets. As a result, exports declined 8.6% in 2016 alone, beginning a trend that has continued into 2018. Moreover, a rapid drop in global energy and commodity prices from 2014 through 2016 diminished demand from key export markets, such as Singapore, Mexico, Saudi Arabia and Brazil. Nevertheless, rising export demand over the past decade has been attributed to the onset of global regulations regarding workplace and residential safety that often emulate US standards. Furthermore, the NFPA's international operations department works to develop and increase global awareness of its mission by promoting worldwide use of NFPA's technical and educational information. Its international offices work to advance the use and adoption of NFPA codes and standards throughout their territories (Asia-Pacific, Europe, Latin America, Middle East and Africa).

The industry also imports a significant amount of fire extinguishers. In 2018, imports are expected to account for 12.6% of domestic demand. Industry imports have rapidly increased at an annualized rate of 4.5% to $145.7 million over the five years to 2018. In particular, access to cheaper labor in neighboring Mexico has caused key industry players to locate manufacturing facilities abroad, reducing industry revenue for US manufacturing operations. More than 85.0% of industry imports come from Mexico, as geographic proximity, free-trade agreements and the presence of major global fire extinguisher manufacturers, such as United Technologies Corporation, offer an array of industry-relevant products from manufacturing facilities south of the US border.

Access to cheaper labor in neighboring Mexico has caused key industry players to locate facilities abroad

A result of growing popularity among manufacturing companies and wholesalers for foreign-manufactured fire extinguishers has seen industry revenue struggle over the past five years. With increasing numbers of factories in Mexico and China, buyers from construction and industrial markets now look to foreign imported products. The effects have outweighed those of a healthy US economy and resulted in overall declining industry revenue during the current period.

Industry Performance

Profit rises while industry wages stagnate

Improving demand conditions, driven by greater construction activity and industrial output, ushered in a slight increase in industry profitability over the past five years, though volatile foreign demand has minimized the effects. Additionally, over the past several years, industry operators have benefited from a decline in input and raw material prices. Weaker demand from developing economies, such as China, has lowered aluminum and steel prices, which are commonly used in the pressure vessels, valves and pins used in industry manufacturing operations. These factors have facilitated a marginal increase in industry profit margins, which are expected to account for 6.7% of industry revenue in 2018, up from 6.6% in 2013.

Despite this recent growth, over the five years to 2018, industry participation has steadily declined. In 2016 in particular, industry operators were subject to the dual burden of falling revenue and diminishing export demand. Although chemical and metal prices declined from 2014 through 2016 and the US dollar's rising value increased purchasing power, difficult business conditions forced some industry operators to implement cost-control policies. As a result, over the five years to 2018, the number of industry establishments is expected to decrease an annualized 3.7% to 24. Moreover, industry wages declined at an annualized rate of 3.6% to $157.6 million during the five-year period as industry operators cut costs in an effort to remain profitable.

Industry operators have benefited from a decline in input and raw material prices

Industry Performance

Industry Outlook

The Fire Extinguisher Manufacturing industry is expected to heat up over the next five years. Demand for fire extinguishers is forecast increase from 2018 onward as upward growth trends in the US construction and industrial sectors are anticipated to continue. Regulations on the presence of hand-portable fire equipment, coupled with re-emerging export demand, will also support sales of industry products. Furthermore, industry operators will continue to develop new products, further expanding product penetration into consumer and commercial markets, such as transport and household use. Overall, industry revenue is expected to increase at an annualized rate of 2.0% to $1.3 billion over the five years to 2023.

As demand conditions improve and the industry increasingly invests in capital and productivity enhancements, profit is also expected to expand. Furthermore, commodity prices for inputs such as steel are projected to increase steadily, with less volatility, enabling manufacturers to better plan production, purchasing and selling prices. Consequently, the average industry profit margin is expected to reach 6.8% of revenue in 2023, slightly up from 6.7% in 2018. Despite these positive factors, slow revenue growth is not expected to attract new industry operators. Combined with full product acceptance among downstream markets and a lack of significant innovation or new products, the number of industry operators is forecast to decline. Additionally, the trend of consolidation among larger factory operations is expected to continue, leading the number of industry operators to decline an expected annualized 1.0% to just 20 over the five years to 2023. However, increased demand for industry products will likely bolster industry employment, with the number of workers in this industry anticipated to increase an annualized 1.1% to 2,874 people over the five years to 2023.

Construction and international markets

Fire extinguisher demand is heavily dependent on the health of the overall Construction sector (IBISWorld report 23). The construction of new homes, particularly multifamily residences, increases demand for fire extinguishers because most local and state health and housing codes require the availability of such products for tenant use as well as during the construction process. Over the next five years, rising corporate profit will entice developers and individuals to invest in new units. Simultaneously, the value of residential construction is expected to increase an annualized 0.7%, while the value of private nonresidential construction is anticipated to increase at a stronger annualized rate of 1.4%.

Nonresidential (i.e. commercial) construction activity also influences demand for fire extinguishers. Greater investment in industrial and business properties generally creates equal movements in demand for fire extinguishers because of their required placement within workplaces, according to regulations imposed by OSHA (the Occupational Safety and Health Administration). Therefore, as new buildings are constructed and inhabited, sales of fire extinguishers will increase.

As housing and commercial construction strengthens, demand will increase

Recovery will also be aided by the anticipated decline in the value of the US dollar, creating renewed demand from foreign consumers. However, although the trade-weighted index is forecast to decline an annualized 0.6% over the five years to 2023, making US-manufactured products more

Industry Performance

Construction and international markets continued

affordable abroad, trade performance will be dependent on foreign demand as well, with Mexico in particular emerging as a key export competitor. As a result, IBISWorld does not anticipate that trade activity will resume its expansive pace exhibited prior to the five-year period to 2018.

Other demand sources

As the construction market strengthens over the next five years, general industrial activity is also expected to ramp up. In turn, demand for fire extinguishers used in factories and equipped within freight vehicles will increase as well. Major player Amerex Corporation (Amerex), for instance, markets its products to the commercial sector heavily. In particular, Amerex recommends fire containment equipment for transport vehicles, as this equipment not only protects against the spread of potential fires but also helps transport providers lower their insurance premiums. Overall, industrial production, as measured by the industrial production index, is expected to increase at an annualized rate of 1.4% during the five-year period to 2023.

Industry operators are expected to continue developing new products, especially as they try to expand the presence of fire-extinguishing equipment beyond traditional markets. Similar to most industries, extinguisher manufacturers are continually racing to create products that extinguish fires in a shorter amount of time. Over the next five years, research and development is anticipated to continue as companies seek innovative solutions that resonate with customers for their ease of use and efficacy. These products also appeal to consumers who may be hesitant to have fire-extinguishing equipment in their homes because of its complicated nature, thereby increasing companies' direct sales to consumer markets and retailers. Moreover, the US Federal Aviation Administration recently launched a market survey in its search for a portable handheld fire extinguisher that does not use ozone-depleting Halon 1211, indicating a trend toward safer and more environmentally friendly products.

Improving industrial activity will support industry growth

Additionally, international markets are anticipated to increase demand for fire extinguishers. Over the five years to 2023, exports are forecast to increase at an annualized rate of 2.6% to $223.8 million. As rapidly developing economies in Asia and Latin America increasingly bolster regulations for health and safety, demand for exports will improve. Industry imports are also expected to increase over the next five years, albeit at a more subdued annualized rate of 1.1% to $154.1 million. Slower economic growth in countries such as China will lead to a reduction in industry-relevant manufacturing, thereby pressuring industry imports.

Industry Performance

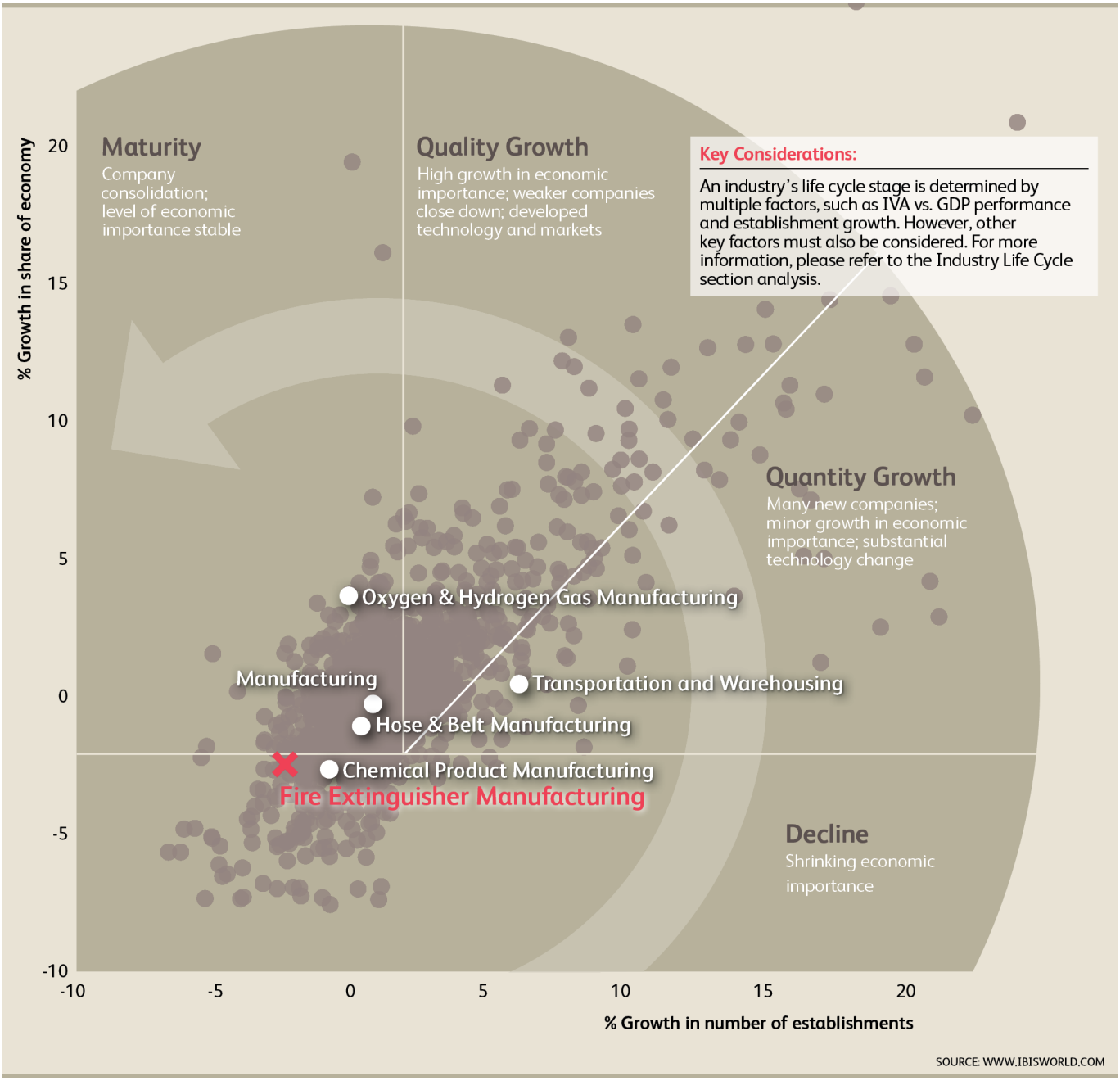
Life Cycle Stage

Industry value added is expected to grow at a slower rate than the overall economy

Industry products are accepted wholeheartedly by downstream markets

The adoption of fire extinguishers is stable

The number of industry enterprises is expected to stagnate over the 10 years to 2023



SOURCE: WWW.IBISWORLD.COM

Industry Performance

Industry Life Cycle

This industry is **mature**

IBISWorld analysis indicates that the Fire Extinguisher Manufacturing industry is in the mature stage of its life cycle. Industry value added (IVA), which measures the industry's contribution to the overall economy, is forecast to decline at an annualized rate of 0.4% over 10 years to 2023. Meanwhile, US GDP is projected to grow an annualized 2.2% during the same period. Normally, this discrepancy between US GDP and IVA growth suggests the industry is in its declining stage, but other factors support this industry's maturity.

Downstream markets exhibit complete acceptance of this industry's product segments, and demand for hand portable fire extinguishers depends on new building construction and replacement demand. However, over the past decade, an increase in regulations and a movement away from environmentally hazardous extinguishers has provided a boost to industry innovation and revenue. Demand from US markets in particular has exhibited remarkable steadiness, affected primarily by the competitiveness of imports. As the US dollar remains strong, imports will remain competitive among US markets, although a diminishing value of the US dollar is expected to restore demand for industry products manufactured in the United States.

Lastly, the industry is expected to see little growth in terms of employment and the number of establishments. Over the 10 years to 2023, the number of industry establishments has steadily declined, despite rising industry revenue. The moderate presence of imports and the availability of lower cost labor in nearby countries, such as Mexico will continue to pressure industry growth over the next five years. However, as exports begin to trend upwards once more, industry employment is expected to increase as well, indicating the industry's maturity.

Products & Markets

Supply Chain | Products & Services | Demand Determinants
Major Markets | International Trade | Business Locations

Supply Chain

KEY BUYING INDUSTRIES

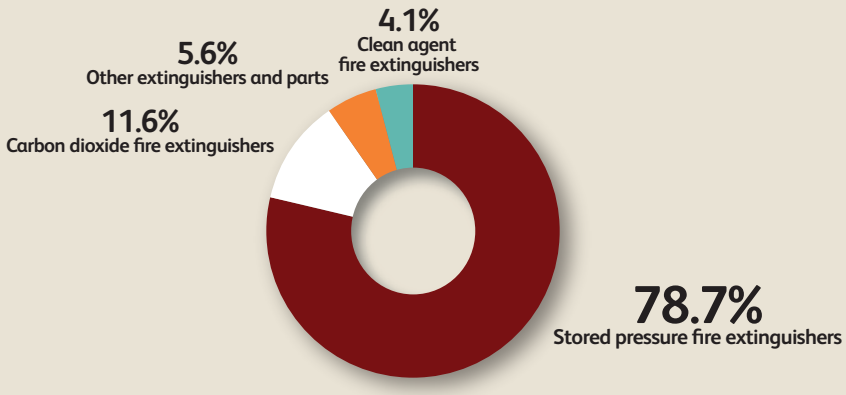
31-33	**Manufacturing in the US** Many manufacturing plants demand fire extinguishers due to the fire-prone nature of their industrial processes.
44411	**Home Improvement Stores in the US** Home improvement stores often retail portable fire extinguishers.
48-49	**Transportation and Warehousing in the US** Commercial transport services from buses to freight demand in-vehicle fire extinguishers to help keep insurance costs low.
72	**Accommodation and Food Services in the US** Food-service establishments demand fire extinguishers to control kitchen fires.
99	**Consumers in the US** Consumers form the primary market for portable fire extinguishers, often keeping one in the home or office for personal safety.

KEY SELLING INDUSTRIES

32599	**Chemical Product Manufacturing in the US** Chemical product manufacturers make chemical preparations for portable fire extinguishers.
32622	**Hose & Belt Manufacturing in the US** Hose manufacturers sometimes supply hoses for fire extinguishers.
33243	**Metal Can & Container Manufacturing in the US** Metal container manufacturers sometimes supply tanks for extinguishers.

Products & Services

Products and services segmentation (2018)



Total $1.2bn

SOURCE: WWW.IBISWORLD.COM

According to the National Association of Fire Equipment Distributors (NAFED), there are two primary types of fire suppression systems. The first, dry chemical systems, uses dry chemical compounds that suppress fire. These systems require recharging after operation. Dry chemical systems are used in industrial settings to protect against ordinary combustible (Class A), flammable liquid and gas (Class B) and electrical equipment (Class C) fires.

The second type, known as wet chemical systems, are most frequently

Products & Markets

Products & Services continued

used in commercial cooking areas, as wet chemical agents reacts quickly with fats or oils to blanket the suppress cooking fires before major damage occurs. Moreover, the cooling effect of the wet chemical agent reducing the chance of re-ignition.

Fixed fire extinguishing and suppression systems are engineered to provide site-specific protection at the earliest stage of a fire, by filling a designated area with a chemical extinguishing agent. Thus, they are used to protect potentially hazardous areas, such as commercial kitchens, research facilities, industrial sites and data processing rooms. Conversely, hand-portable fire extinguishers are easy to operate, require minimal training and are used by civilians and firefighters. The following is a breakdown of product segments within fire extinguishers by the type of extinguishing agent and process, based upon survey results from the NAFED.

Stored pressure fire extinguishers

The most common type of fire extinguisher are multipurpose dry chemical portable extinguishers, also known as stored pressure extinguishers. These devices include chemical preparations of monoammonium phosphate and sodium bicarbonate powder and powered with a nitrogen propellant. These extinguishers are effective in Class A, B and C fires. This diversity in applications explain this product's dominant share of the Fire Extinguisher Manufacturing industry's revenue, as dry chemical extinguishers (often painted red) are ubiquitous in homes, offices and hotels. Typically, in these units, the expellant is stored in one single cylinder along with the agent. The versatility of stored pressure units allows them to be adjusted according to the needs of a variety of markets and potential fire hazards. Furthermore, they are often easier to manufacture and simpler to operate, which makes them popular among businesses and households for potential civilian use. Overall, manufacturing of stored pressure systems are estimated to account for 78.7% of industry revenue in 2018.

Stored pressure systems are highly integrated and commonly include: storage containers filled with fire extinguishing agents; piping, which is used to transport the extinguishing agent; a discharge nozzle, which is used to automatically disperse the agent into the protected area; as well as an automatic control system and fire detector. Their grades typically vary between A, B and C according to the environment. For example, while Class A extinguishers are most commonly used in offices and households, Class B are popular within industrial kitchens and factories, while Class C are often used for generators and data centers that consume excessive electricity in their operations.

Carbon dioxide fire extinguishers

Another popular agent used in portable fire extinguishers is carbon dioxide. Distinguishable by their large tapered nozzles and substantial weight, carbon dioxide extinguishers commonly expel a white cloud of carbon dioxide onto a fire, which smothers and chokes the flames of oxygen. These clean agent fire extinguishers are used for Class B and C fires and more common in industrial settings because their expellant can be intermittently recharged for continuous firefighting. Carbon dioxide fire extinguishers are estimated to account for 11.6% of industry revenue in 2018. Over the five years to 2018, this segment experienced a slight decline in its share of industry revenue due to its limited uses and potential to blow burning materials into surrounding areas.

Other extinguisher types and parts

Other extinguisher agents used in fire extinguishers include clean agents. Clean

Products & Markets

Products & Services continued

agents, used in portable fire extinguishers, include Halotron, wet chemical, foam and water. Developed in the 1960s, Halotron fire extinguishing products contain Halon 1211 and Halon 1301, gaseous agents that inhibit the chemical reaction of a fire. Completely banned in Europe because of its ozone-depleting qualities, these extinguishers are still used in air fields and other military applications. Over the past five years and the past decade, this product segment's share of industry revenue has declined, as Halotron units have been replaced by more environmentally friendly alternatives. Overall, clean agent extinguishers account for just 4.1% of revenue in 2018.

Wet chemical fire extinguishers create a barrier between the oxygen and fuel elements within a fire and are commonly used in commercial kitchens to prevent the re-ignition of cooking fires. For example, wet chemical class K extinguishers, which contain potassium bicarbonate or potassium chloride, are primarily used for commercial deep fat fryer fires. Foam extinguishers use either water-based, synthetic or protein foams to create a "blanket" of froth to suffocate a fire's oxygen supply. Water extinguishers are designed to cool burning metals. This product segment's share of total industry revenue has increased over the past five years, as downstream markets are moving away from multi-purpose dry chemical extinguishers towards industry products designated for specific applications, such as class K chemicals for cooking fires.

Replacement parts and equipment for fixed fire suppression systems, such as storage containers, recharges of extinguishing agents, control panel components, piping and discharge nozzles are also included in the other minor industry products. This segment also includes parts for portable fire extinguishers, including pressure gauges, discharge levers, carrying handles, wall mounts and discharge hoses and nozzle assemblies. In total, replacement parts and equipment, as well as pressurized water and foam extinguishers, only account for an estimated 5.6% of industry revenue.

Demand Determinants

Several regulatory and downstream factors affect demand for the Fire Extinguisher Manufacturing industry. Regulations regarding the placement and accessibility of fire extinguishers in workplaces, schools, residential buildings and other establishments have supported industry demand for decades and prompted stable revenue growth. Demand for other downstream industry is more volatile and prone to changes in the business cycle. Shifts in construction, industrial output and business formation, therefore, affect industry revenue, as new businesses, factories and transportation activity generally facilitates higher demand for portable fire extinguishers. To a lesser extent, currency fluctuations also play a role in determining overseas demand and import penetration.

Construction demand

Commercial construction demand includes spending on office buildings, hospitals, factories, power plants, mining shafts, communication lines, farms, railroads and schools. Most of these locations are required to keep fire extinguishers on premises. As a result, spending on new or renovated commercial structures generally increases demand for industry products. Likewise, residential demand for fire extinguishers is strongly tied with the construction of new single-family homes and apartment buildings. Regulations requiring the placement of fire equipment in multifamily

Products & Markets

Demand Determinants continued

establishments and general safety concerns cause demand for fire extinguishers to increase when new residential homes and buildings are constructed. Both commercial and residential construction activity plummeted in the wake of the subprime mortgage crisis and recession. However, these vital markets rebounded over the past five years, contributing to an increase in industry revenue.

Industrial demand

Activity in the mining, manufacturing, electric, gas and transport industries also affects demand. Industrial facilities represent elevated risks for liquid, electrical and combustible metals fires, so these locations often keep ample fire-fighting equipment on hand. For example, fixed dry chemical systems are commonly installed in industrial settings to protect against ordinary combustible (Class A), flammable liquid (Class B) and electrical equipment (Class C) fires.

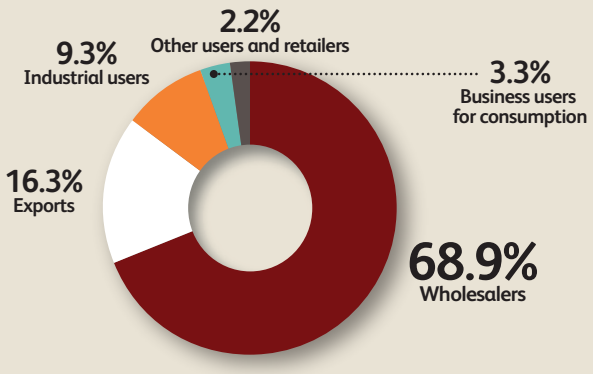
Likewise, transport vehicles, such as buses, trains, freight trucks and boats, keep in-vehicle units in case of engine or other fires. Regulations mandate the placement of fire extinguishers in manufacturing facilities and public transportation vehicles. As industrial production increases and more vehicles are purchased or put into use, demand for fire extinguishers rises. From 2010 onward, as consumer spending started to rise, US industrial production has steadily increased, bolstering industry revenue.

Overseas demand

The trade-weighted index (TWI) reflects the relative value of the US dollar against the currencies of its trading partners. A strengthening of the US dollar could potentially encourage industry imports as portable fire extinguishers produced overseas become relatively cheaper for US buyers. Simultaneously, exports from US manufacturers would likely decrease, harming industry revenue as a result.

Major Markets

Major market segmentation (2018)



Total $1.2bn

SOURCE: WWW.IBISWORLD.COM

Wholesalers

Wholesalers that resell industry products are the Fire Extinguisher Manufacturing industry's largest market, accounting for an estimated 68.9% of revenue in 2018.

Hand-portable fire extinguishers, as well as parts and components for fixed fire suppression systems, are commonly sold to wholesalers of all specialties, including machinery, hardware, plumbing and

Products & Markets

Major Markets continued

heating equipment wholesalers. Additionally, wholesalers sell, install and service pre-engineered kitchen fire suppression systems, industrial systems, hoses and standpipes, portable extinguishers and other products produced by the Fire Extinguisher Manufacturing industry.

Over the five years to 2018, this market's share of industry revenue is expected to increase slightly as demand for specialist wholesalers increases to meet rising construction activity, which propelled demand for building product wholesalers. Growth in the wholesale market is expected to be emphasized by the declining market for exports and industry revenue as a whole.

Exports

Exports account for an estimated 16.3% of industry revenue in 2018. Overseas markets are primarily driven by commercial and residential construction. Due to geographic proximity and favorable trade relationships, the Fire Extinguisher Manufacturing industry exports its products to countries like Canada and Mexico, as well as the EU. However, increasing industrial and construction activities overseas, especially in Asia, Latin America and the Middle East helped maintain the value of industry exports over the past five years, despite a rising trade-weighted index. For more information, see the International Trade section.

Construction companies and industrial users

Construction companies purchase a variety of fire extinguishing equipment when building or renovating structures, while industrial facilities are often at increased risk of fire and require significant spending on precautions as a result. Combined, this market accounts for an estimated 9.3% of industry revenue in 2018. The commercial building subsector includes contractors, which specialize in office, restaurant and manufacturing facility construction. The installation of fixed fire suppression systems is common in these structures as they often contain potentially hazardous areas, including kitchens, electrical, gas or chemical industrial sites. Moreover, industrial structures are often required by law to maintain fire extinguishers in accessible places. Demand from this segment is expected to increase over the five years to 2018, as the industrial production index has increased at an annualized rate of 1.1% during the same period.

The residential building subsector includes contractors, which specialize in apartment and single-family home construction. Apartment buildings in particular are likely to exhibit higher levels of extinguisher ownership thanks to regulations that require property managers and owners to keep them in hallways, elevator lobbies and foyers. Single-family residences have more freedom in their choice of fire protection, but many households, especially those with children, opt for fire extinguishers as an affordable safety solution. Increased housing demand and a spike in housing starts over the past five years has increased demand from this market segment.

Business users for consumption

Business users purchase fire suppression systems, portable fire extinguishers and related equipment are another major market for this industry and comprise an estimated 3.3% of industry revenue in 2018. These diversified markets include hotels and rental spaces, as well as restaurants and other food service establishments, which demand fixed system wet and dry fire suppression systems. Revenue from this market has remained relatively stable over the past five years, as business expenditures gradually increased during this period.

This segment also includes commercial freight trucking, train and marine

Products & Markets

Major Markets continued

transportation companies. The need to prevent property loss stemming from engine fires influences demand from these markets. Demand from this segment is estimated to have increased over the past five years because insurance companies often offer incentives on premiums for vehicle owners that install fire extinguishers on board.

Other

Federal, state and municipal governments are another vital market for the Fire Extinguisher Manufacturing industry. Combined with retailers, they represent the remaining 2.2% of revenue-generating customers for manufacturers. It is worth noting that a number of users within this market segment are customers of fire-extinguishers wholesalers, who are themselves the largest market for manufacturers. This market includes federal, state and local institutional buildings, such as schools, courthouses, hospitals and office buildings, as well as various retailers. Similar to other nonresidential structures, these facilities are required by law to adhere standards set by the National Fire Protection Association and the Occupational Safety and Health Administration regarding the installation, inspection, maintenance and testing of portable extinguishing equipment. Federal, state and local government investment, after falling precipitously prior to the current period, has inched upwards over the past five years.

Large retailers consist of traditional home improvement stores, mass merchandisers and department stores. Independent retailers would include smaller hardware, consumer electronics, paint and convenience stores. This market principally purchases portable, handheld fire extinguishers, which are then sold directly to homeowners. Consequently, increasing employment, disposable income, residential construction and private spending on home improvements lead to an increase in demand from this market over the past five years.

International Trade

Level & Trend

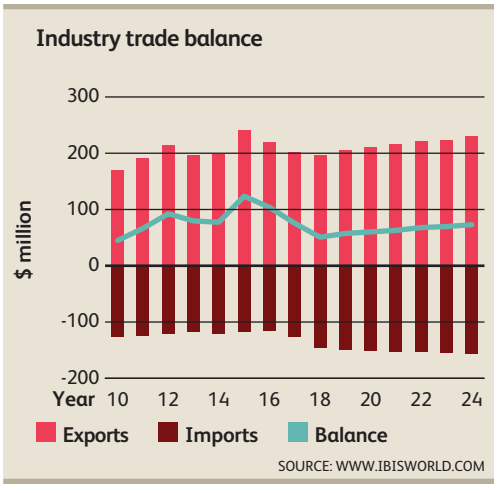
Exports in the industry are **Medium** and **Steady**

Imports in the industry are **Medium** and **Increasing**

International trade is vital to revenue growth for the Fire Extinguisher Manufacturing industry. The industry has consistently exhibited a trade surplus over the past five years, with exports as a share of revenue outweighing imports as a share of domestic demand. The presence of Canada and Mexico as both an import source and export destination reflects shared geographical borders that facilitate trade as well as favorable conditions under the North American Free Trade Agreement (NAFTA).

Exports

Over the five years to 2018, exports are expected to increase at a stagnant annualized 0.0%, totaling $196.5 million in 2018 compared to $196.4 million in 2013. The top export destinations include Canada, Saudi Arabia, Mexico and Germany. Due to diminished construction activity in neighboring North American markets as



Products & Markets

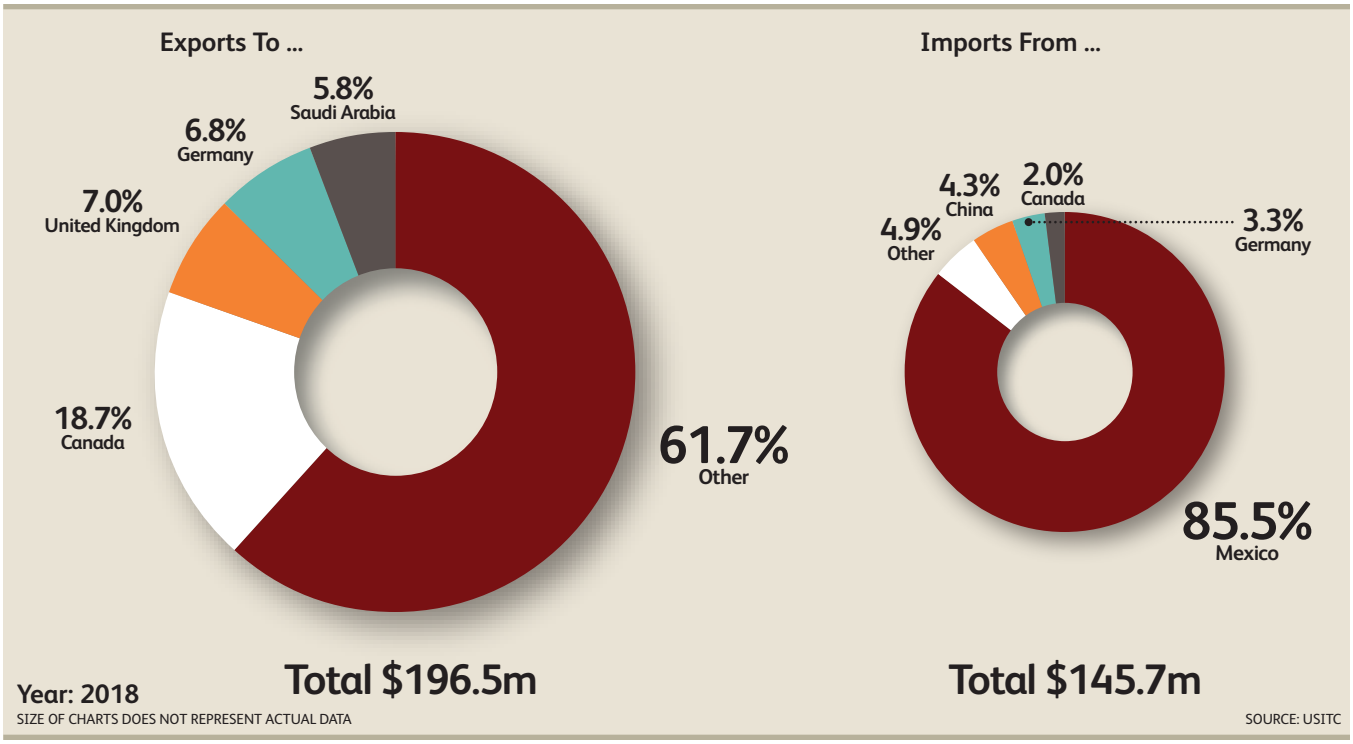
International Trade continued

well as slower industrialization and economic growth in emerging economies, which also demand industry related products, export growth has been tepid during the current period. Over the past five years, export revenue has ranged from 15.5% to 20.1% of total industry revenue. While export growth was strong between 2013 and 2015, the value of exports has declined in the years since then. In 2016, for example, exports declined 8.6% as the trade-weighted index peaked as the US dollar was relatively much more expensive than foreign currencies among US trade partners.

As developed and emerging nations continue to increase construction and expand their industrial capabilities, industry revenue will steadily improve as more commercial and residential structures as well as an increase number of transportation vehicles will facilitate the need for new portable fire extinguishers. The industry will likely experience year-to-year fluctuations in export revenue, but the general trend over the next five years will be towards export growth, with export revenue projected to increase an annualized 2.6% to $223.8 million.

Imports

Meanwhile, over the five years to 2018, industry imports have increased dramatically at an annualized rate of 4.5%, totaling $145.7 million in 2018. Although import growth was relatively slow during most of the current period, imports were estimated to increase 8.0% in 2017 alone, an upward trend that has continued into 2018 so far. The top import sources include Mexico, China, Germany and Canada. Imports from Mexico are estimated to account for more than 85.0% of total imports in recent years. Countries, such as China and Mexico have a comparative cost advantage in manufacturing portable fire extinguishers due to lower labor costs and fewer regulations. As a result, many operators in the United States find it more cost-effective to import industry



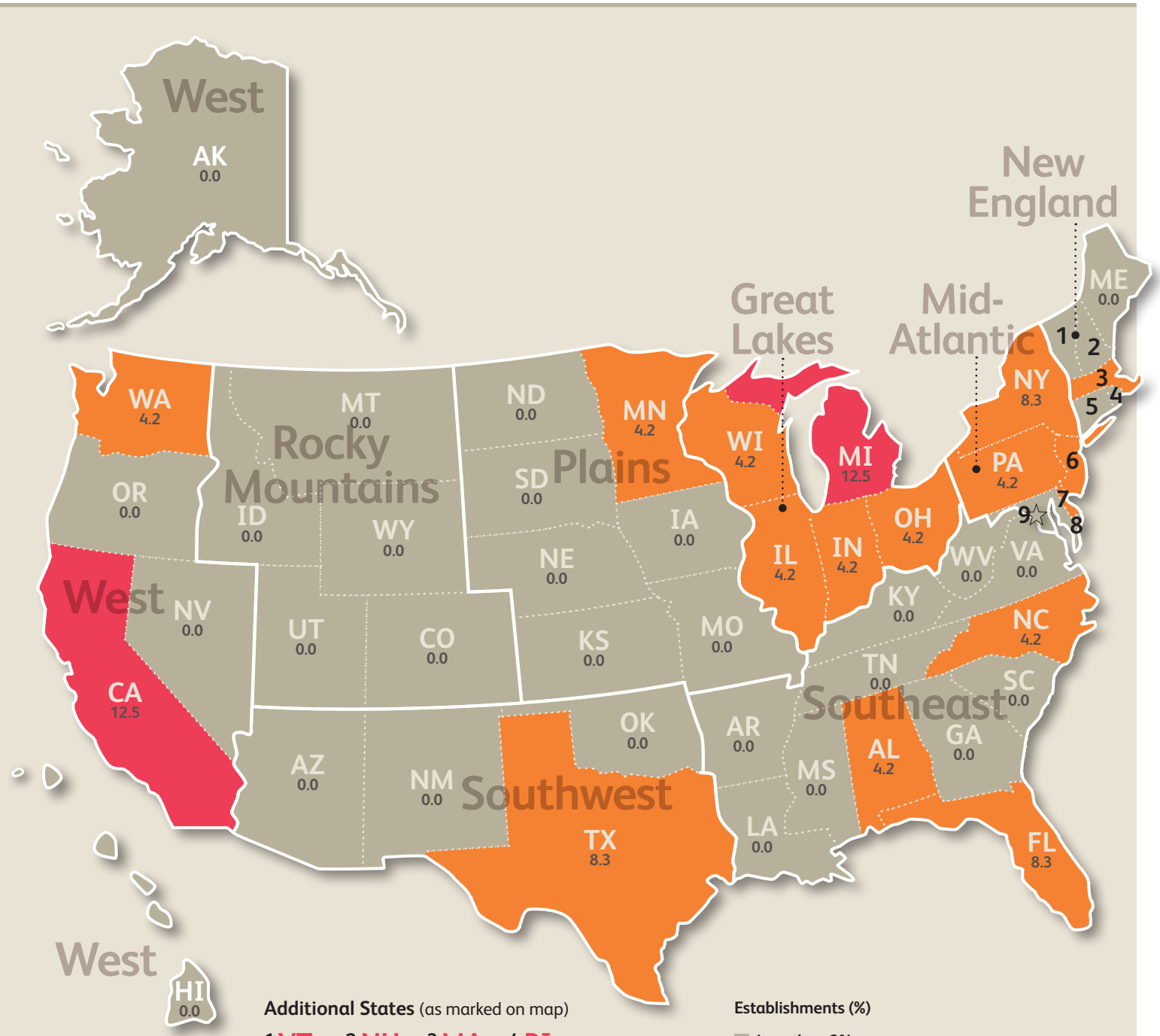
Products & Markets

International Trade continued

products and many global corporations have decided to locate their manufacturing facilities in these countries. Over the next five years, slowing growth in manufacturing nations like China, will cause imports to increase much more gradually, at an expected annualized rate of 1.1%, totaling $154.1 million in 2023.

Products & Markets

Business Locations 2018



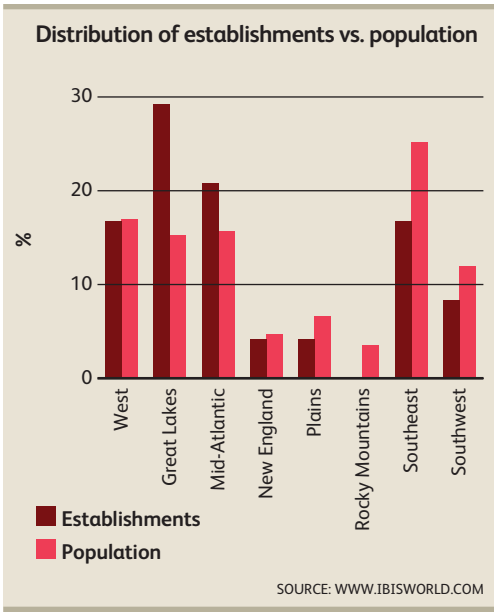
SOURCE: WWW.IBISWORLD.COM

Products & Markets

Business Locations

IBISWorld estimates that establishments in the Fire Extinguisher Manufacturing industry are most heavily concentrated in the Mid-Atlantic and Great Lakes regions of the United States. In general, the location of manufacturing establishments tends to follow the general distribution of the population, with companies locating their businesses next to major metropolitan hubs with high levels of business activity and port towns that facilitate international trade.

The Southeast is home to Amerex Corporation in Alabama, while Florida's high population density makes it attractive for manufacturing activities. Florida alone is estimated to account for 8.3% of manufacturing facilities in the US. Similarly, California is estimate to contain 12.5% of establishments, while Michigan contains the same concentration due to its dominant manufacturing presence and employee base. The Great Lakes (29.2% of establishments), Mid-Atlantic (20.8%), Southeast (16.7%) and West (16.7%) regions constitute the top four areas of industry concentration by establishment, with each featuring prominent manufacturing hubs.



Competitive Landscape

Market Share Concentration | Key Success Factors | Cost Structure Benchmarks
Basis of Competition | Barriers to Entry | Industry Globalization

Market Share Concentration

Level
Concentration in this industry is **Medium**

The Fire Extinguisher Manufacturing industry is characterized by a medium level of concentration. Industry operators specialize in certain types of extinguishers for particular markets, which allows for some fragmentation and limits the possibility of high concentration. Nevertheless, contracts with public agencies limit opportunities for new entrants and maintain concentration at a medium level. Over the next five years, large extinguisher manufacturers, such as United Technologies Corporation, will continue to seek other North and Central American markets, like Mexico, as locations for their manufacturing facilities, as these nations offer lower labor costs when compared to the United States. Economies of scale will continue to allow larger operators to maintain their strong market share as they increase automation through technological advances and expand their operating capacities across the border.

Key Success Factors

IBISWorld identifies 250 Key Success Factors for a business. The most important for this industry are:

Ability to educate the wider community

Raising public awareness about the dangers of residential fires and laws that require fire extinguishers to be kept on premises can help the industry increase market penetration.

Automation – reduces costs, particularly those associated with labor

Like most manufacturing activities, the ability to automate processes reduces wages costs and increases efficiencies, thereby improving profit margins.

Effective quality control

The ability to control quality and minimize faulty products reaching the market will help increase brand loyalty through perceived reliability.

Ability to accommodate environmental requirements

Manufacturers experience a range of regulations regarding the generation and disposal of hazardous wastes. Failure to meet compliance can increase operating costs.

Cost Structure Benchmarks

Profit

Profit margins within the Fire Extinguisher Manufacturing industry vary by operator size and the scope of product offerings and selling markets. Generally, the larger, more-diversified producers can achieve economies of scale, allowing these companies to reduce per-unit purchasing costs. Profit as measured by earnings before interest and taxes is expected to account for 6.7% of industry revenue in 2018, up slightly from 6.6% in 2013. Profit has remained relatively steady over the past five years. An expansion in commercial and residential construction activity increased demand for new fire extinguishers, which has been offset by a declining trade-weighted index since 2016 that makes imports, such as those from US-owned facilities in Mexico, more expensive. Over the five years to 2018, industry operators also benefited from lower raw material costs, slower wage growth when compared with revenue growth as well as an increase in productivity due to past investments in automation equipment.

Purchases

Purchases represent the largest cost item for the industry, accounting for 47.5% of revenue in 2018. Industry operators commonly purchase foams, dry chemical

Competitive Landscape

Cost Structure Benchmarks continued

powders and gases, such as carbon dioxide and nitrogen, depending upon what type of extinguisher is being made. The pressure vessel or body of a portable fire extinguisher is generally made with a steel or aluminum alloy; a fire extinguisher's hose and nozzle are composed of rubber, while valves, pins and actuating handles are made with stainless steel due to the material's anti-corrosive properties. Over the past five years, the price of aluminum and steel have significantly dropped due to a decline in demand from rapidly expanding nations like China. While the purchase of partially completed parts and components from abroad will remain a significant cost over the next five years, uncertainty exists surrounding potentially implemented tariffs and the strength of the US dollar during the next five-year period to 2023.

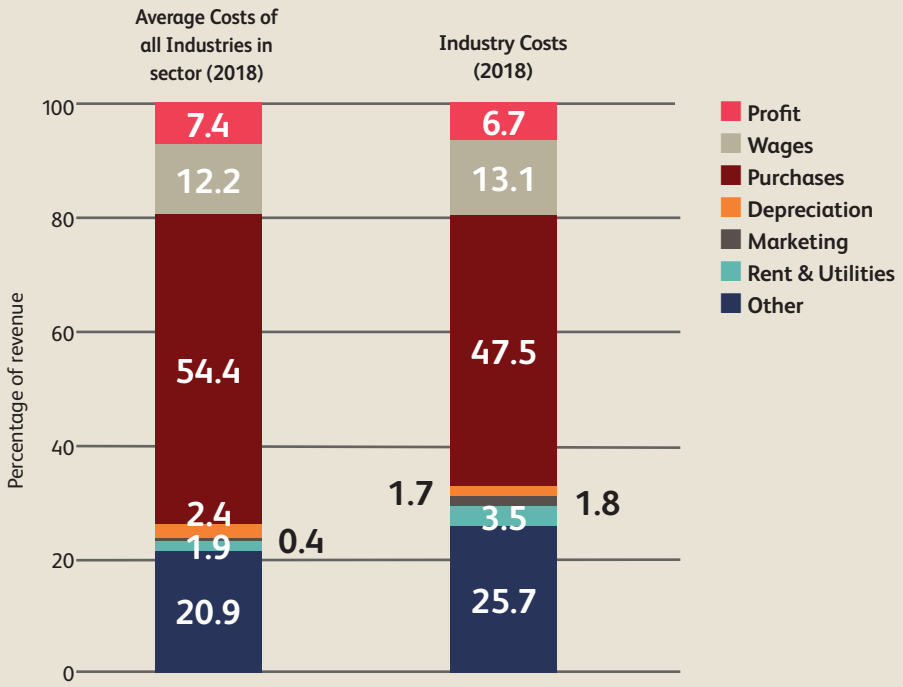
Wages

Wage costs are expected to account for 13.1% of industry revenue in 2018. Wages share of total industry revenue have declined in the past five years, as industry operators have increased investments in labor-saving productive machinery and equipment. Furthermore, operators have become increasingly incentivized to offshore manufacturing facilities in China and Mexico in order to minimize payroll expenses and employ cheaper labor. As a result, over the five years to 2018, industry employment is expected to decrease at an annualized rate of 2.8%, while wages decline a steeper annualized 3.6% during the same period.

Depreciation and other costs

Depreciation or amortized investments in capital machinery, equipment and structures is expected to account for 1.7% of total industry revenue in 2018.

Sector vs. Industry Costs



SOURCE: WWW.IBISWORLD.COM

Competitive Landscape

Cost Structure Benchmarks continued

Depreciation in this industry is low as most of the component parts used in fire extinguisher products are purchased from other manufacturers and typically have long life-times. Consumers often view portable fire extinguishers as a necessity and businesses are often mandated by law to have industry related products in their offices, warehouses and manufacturing plants. As a result, marketing costs for the Fire Extinguisher Manufacturing industry are very low. Other costs include utilities, rent, interest and bank charges, business and professional fees for legal and accounting services, as well as general selling and administrative expenses.

Basis of Competition

Level & Trend
Competition in this industry is **Low** and the trend is **Steady**

Engineered fire suppression systems provide site-specific protection at the earliest stage of a fire. Consequently, these systems are essential for hazardous areas, including commercial kitchens, woodworking, tooling shops and other industrial sites that manufacture and store flammable gases and liquids. Additionally, fire extinguishers are considered mandatory devices on a number of premises, such as businesses, schools, airports and public transportation vehicles. In general, federal and state guidelines mandate the presence and maintenance of portable fire extinguishers in businesses and at other locations. Even in settings where the presence of fire extinguishers is not mandated, consumers often view these products as essential safety and risk management devices.

Given the often-mandatory nature of the extinguisher market, operators in the Fire Extinguisher Manufacturing industry compete on product quality, innovation, price and customer service. To a lesser degree, brand-name recognition plays a role in swaying consumer opinion. At the same time, competitive factors vary by location and product line, with industry operators frequently competing to partner with an extensive and well-connected wholesale network that has extensive geographic coverage. Product quality is often based on perception related to brand names.

Barriers to Entry

Level & Trend
Barriers to Entry in this industry are **Low** and **Steady**

The Fire Extinguisher Manufacturing industry exhibits low barriers to entry. New entrants may encounter difficulty creating brand loyalty without the use of a recognizable name. Still, the low concentration of industry companies indicates possibilities for entry into smaller markets, such as those bound by geographical regions.

The often-mandatory need to keep an extinguisher on hand helps keep demand relatively steady, but demand levels are often low due to the infrequency of fires and long replacement cycles. Also, the technology inherent in traditional fire extinguishers and the processes used to make them have changed little over the past decade, which increasingly benefits existing manufacturers that already have relationships with material suppliers and downstream customer markets.

Barriers to Entry checklist

Competition	Low
Concentration	Medium
Life Cycle Stage	Mature
Capital Intensity	Medium
Technology Change	Low
Regulation and Policy	Medium
Industry Assistance	Low

SOURCE: WWW.IBISWORLD.COM

Competitive Landscape

Industry Globalization

Level & Trend
Globalization in this industry is **Medium** and the trend is **Increasing**

IBISWorld analysis reveals the Fire Extinguisher Manufacturing industry displays a medium level of globalization. Many large portable fire extinguisher manufacturers, such as United Technologies Corporation (UTC) and Jarden Corporation (the latter of which is now owned by Newell Brands), produce portable fire extinguishers at a global level. For example, UTC produces fire extinguishers through its Kidde subsidiary, which has a dominant share of manufacturing activity outside of the United States, in Mexico. UTC also makes fire extinguishers in the United Kingdom and Australia under the Chubb brand.

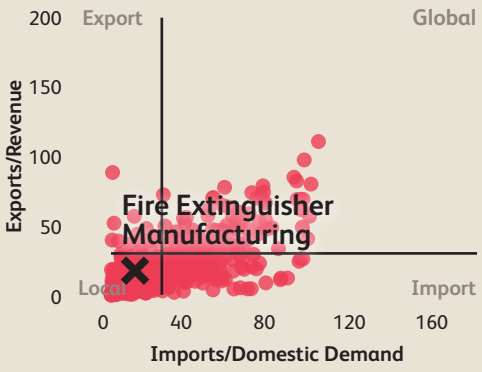
In addition to the global nature of the leading players' parent companies, international trade in Fire Extinguisher Manufacturing industry is expanding. Over the past five years, exports have consistently accounted for more than 15.0% of industry revenue, accounting for 16.3% in 2018.

International trade is a major determinant of an industry's level of globalization.

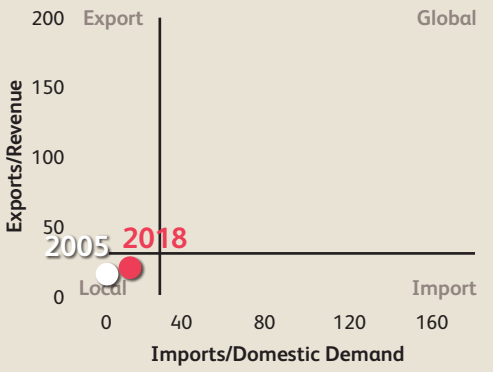
Exports offer growth opportunities for firms. However there are legal, economic and political risks associated with dealing in foreign countries.

Import competition can bring a greater risk for companies as foreign producers satisfy domestic demand that local firms would otherwise supply.

Trade Globalization



Going Global: Fire Extinguisher Manufacturing 2005–2018



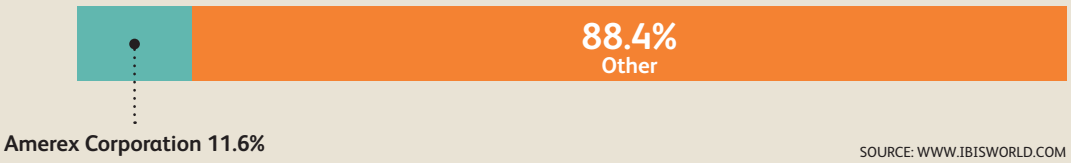
SOURCE: WWW.IBISWORLD.COM

Major Companies

Amerex Corporation | Other Companies

Major Players

(Market Share)



SOURCE: WWW.IBISWORLD.COM

Player Performance

Amerex Corporation
Market Share: 11.6 %

Established in 1971, Amerex Corporation (Amerex) is currently headquartered in Trussville, AL, where it manufactures a variety of hand-portable fire extinguishers, including multipurpose-stored pressure dry chemical, carbon dioxide-stored pressure, foam-stored pressure, high flow, dry powder, dry chemical, wet chemical kitchen, water and water mist extinguishers. Additionally, Amerex produces wheeled fire extinguishers and fire-suppression systems for restaurants and vehicles, as well as mounting brackets, recharging and training equipment and methane gas-detection units. Products are sold through more than 2,000 distributors across the United States.

In 1999, Amerex Corporation was acquired by McWane Inc. (McWane), a broad-based manufacturer of ductile pipes, valves, hydrants, waterwork fittings and steel fabricated parts. McWane has more than 28 foundries and manufacturing plants across 10 states and in Canada. Historically, McWane and its subsidiaries have a collected estimated annual revenue of $2.0 billion.

Financial performance

Over the five years to 2018, industry-relevant revenue for Amerex is expected to decline at an annualized rate of 2.1% to $139.3 million. Sales of fixed fire suppression and hand-portable fire extinguishers have followed the industry at large, increasing in line with trends in building construction, industrial and transportation demand. Moreover, Amerex has benefited from increased demand for fire suppression systems, as higher US employment and disposable incomes encouraged greater spending on kitchen expansions and improvements at

Amerex Corporation (US industry-specific segment) - financial performance*

Year	Revenue ($ million)	(% change)	Operating Income ($ million)	(% change)
2013	154.6	N/C	10.2	N/C
2014	152.8	-1.2	10.4	2.0
2015	143.3	-6.2	9.9	-4.8
2016	140.9	-1.7	9.4	-5.1
2017	138.2	-1.9	9.2	-2.1
2018	139.3	0.8	9.4	2.2

*Estimates

SOURCE: IBISWORLD

Major Companies

Player Performance continued

restaurants and food service establishments. Nonetheless, with the rising popularity of importing products at a reduced cost, Amerex's US-manufactured products have experienced a relative rise in price, which has dented their market share slightly.

Amerex's association with McWane offers the company the competitive advantage in economies of scope, as McWane is a manufacturer of pressure vessels for propane tanks, air receivers and fire suppressants, which are components used in fire extinguishing equipment. Through access to economies of scale and greater purchasing power for parts, raw materials and equipment pieces, Amerex's industry market share is likely to increase over the next five years as the value of the US dollar falls and exports become more competitive.

Other Companies

Fire extinguisher manufacturers include multinational conglomerates such as United Technologies Corporation (UTC) and Jarden Corporation, which was recently purchased by Newell Brands. For example, UTC produces fire extinguishers through its wholly owned Kidde subsidiary. Although Kidde has operations in North Carolina and Delaware, a preponderance of the company's industry-relevant hand-portable fire extinguisher manufacturing activity occurs in Mexico. As a result, UTC and Kidde have limited US industry-relevant operations, as only manufacturing activities that take place in the United States are counted toward company revenue and market share. Nevertheless, UTC has a high market share concentration in North America, as previous IBISWorld estimates assessed that industry-relevant revenue totaled more than $60.0 million. Additionally, UTC manufactures portable fire extinguishers in the United Kingdom and Australia under the Chubb name.

Other Company Performance

Buckeye Fire Equipment Company
Market Share: 4.6 %

Privately owned and operated Buckeye Fire Equipment Company (Buckeye Fire) is headquartered in Kings Mountain, NC. The company is estimated to be the second-largest manufacturer and distributor of fire protection equipment in the US. Their product offerings include foam and equipment concentrates, kitchen suppression and mister systems and wheeled extinguishers. Relevant to this industry, Buckeye Fire produces hand-portable fire extinguishers, including the following extinguishers: standard dry chemical, ABC dry chemical, purple K dry chemical, Halotron, carbon dioxide, wet chemical and class-D dry powder extinguishers for combustible metals. Buckeye Fire's products are thoroughly tested by third parties, such as Underwriters Laboratories. The company is also a recognized member of the Fire Equipment Manufacturers' Association. For example, the company manufactures a full line of Underwriters Laboratories UL-300-certified kitchen suppression systems. Outside the scope of this industry, Buckeye Fire produces gas detection systems such as controllers, gas detection transmitters and open path gas detection equipment.

In 2018, industry-relevant revenue for Buckeye Fire is estimated to total $55.8 million. The company has benefited from an expansion in commercial construction activity, as Buckeye commonly distributes its industry-relevant fire-extinguishing products to businesses,

Major Companies

Other Company Performance continued

such as restaurants and other operators in the foodservice sector. Buckeye Fire has benefited from its expansive product range and ability to create strong wholesale partnerships that span across a number of safety-oriented industries.

Operating Conditions

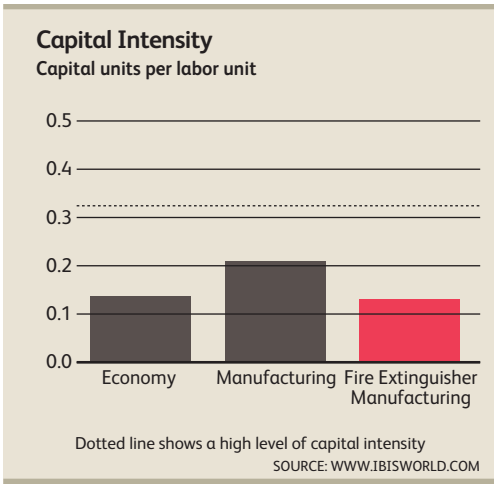
Capital Intensity | Technology & Systems | Revenue Volatility
Regulation & Policy | Industry Assistance

Capital Intensity

Level
The level of capital intensity is **Medium**

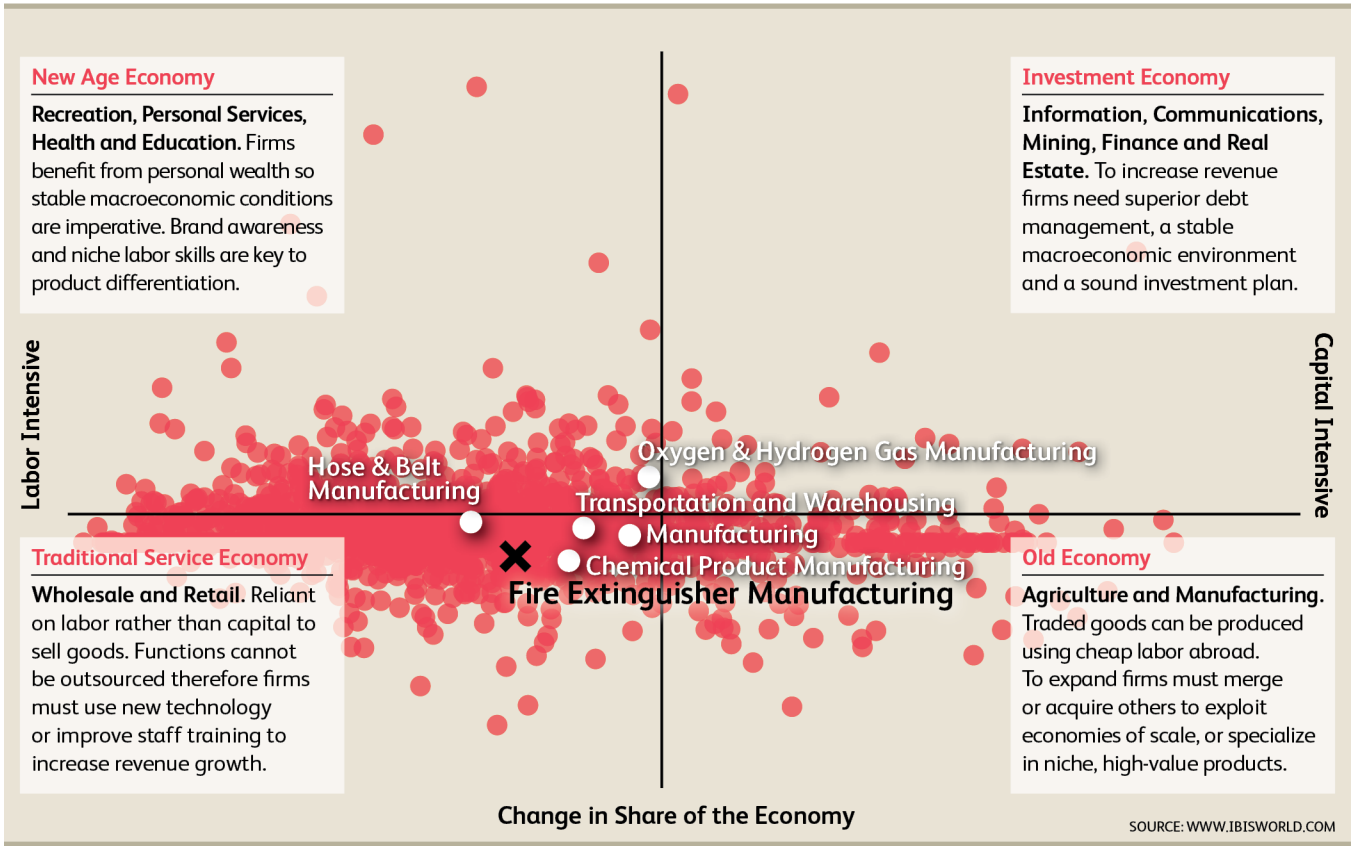
The Fire Extinguisher Manufacturing industry is characterized by a moderate level of capital intensity, as industry operators often purchase ready-made inputs, such as metal containers and plastic hoses, from outside suppliers. Nevertheless, major operators typically require substantial investments in machinery and equipment for manufacturing industry products. As a result, IBISWorld estimates that for every dollar spent on labor, companies in this industry spend $0.13 on capital investments.

Over the past decade, industry operators have been particularly reliant on technology as manufacturing industry products is highly automated.



Consequently, capital intensity has remained moderate over the past five

Tools of the Trade: Growth Strategies for Success



Operating Conditions

Capital Intensity continued

years while wages' share of total industry revenue has declined marginally during this period.

Technology & Systems

Level
The level of technology change is **Low**

The Fire Extinguishing Manufacturing industry exhibits a relatively low level of technology change. The main technological advances include variations of chemical preparations suited for fighting certain kinds of fires, from electrical to chemical and grease. Also, in-vehicle fire extinguishers have gained in popularity, and these units are usually designed to be stored in confined spaces and contain agents geared to fighting petroleum-based fires.

The manufacturing process relies on a number of capital inputs in factories such as conveyor belts, compression systems and a variety of technical inputs. Although technological adjustments have allowed reduced labor-intensiveness across operations, the rate of change has been steady and also largely a result of cheaper wages outside the US.

Revenue Volatility

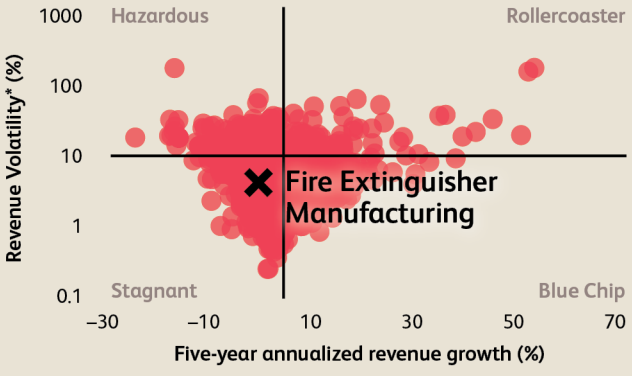
Level
The level of volatility is **Medium**

The Fire Extinguisher Manufacturing industry is characterized by a moderate level of revenue volatility. Sales revenue is highly dependent on downstream demand from the construction and industrial sectors, as well as from overseas. Although these markets witnessed wild performance fluctuations before 2013, a gradual improvement in US employment levels and consumer spending, as well as a stabilization in the credit markets, have led to more stable downstream growth. Contrasting stable growth in the US, US exports have been more volatile and in a state of decline since 2016 due to previous appreciation of the US dollar. Fluctuating values of the US' trade surplus have stimulated declining demand overall, despite stable demand from US consumers. In addition, regulations necessitating the continual maintenance of portable fire extinguishers have the potential to provide stable streams of revenue for industry operators.

A higher level of revenue volatility implies greater industry risk. Volatility can negatively affect long-term strategic decisions, such as the time frame for capital investment.

When a firm makes poor investment decisions it may face underutilized capacity if demand suddenly falls, or capacity constraints if it rises quickly.

Volatility vs. growth



* Axis is in logarithmic scale

SOURCE: WWW.IBISWORLD.COM

Operating Conditions

Regulation & Policy

Level & Trend
The level of Regulation is **Medium** and the trend is **Steady**

In general, the Fire Extinguishing Manufacturing industry encounters a moderate and steady level of regulation. Compliance with federal, state and local environmental legislation regarding the disposal of hazardous waste created during the production process constitutes some of the main regulatory pressures. Also, the industry is subject to regulations regarding the treatment of its workers and terms of their employment. Most US manufacturing industries face such regulations.

OSHA guidelines

More specifically, the regulations affecting downstream consumers of fire extinguishers can affect demand for the industry's products. For example, the National Fire Protection Association (NFPA) sets guidelines for the Occupational Safety and Health Administration (OSHA) regarding the storage, inspection and replacement of fire extinguishers in the workplace. These guidelines are based on the classes of anticipated fires and the degree of hazard affecting their use.

Relevant to this industry are OSHA standards regarding the operation, testing and maintenance of fixed extinguishing systems. Also included are rules related to the use of portable fire extinguishers (PFEs), such as the ban of carbon tetrachloride or chlorobromomethane extinguishing agents. In addition, OSHA mandates that employers keep fully charged and operable PFEs in designated places at all times. Changes to or renewed attention to such guidelines can affect demand for fire extinguishers.

National Fire Protection Association standards

The NFPA develops more than 300 codes and standards to promote fire safety and minimize fire related risks. These standards are approved by the American National Standards Institute.

Industry-relevant codes include: NFPA 12, Standard on Carbon Dioxide Extinguishing Systems; NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems; NFPA 17, Standard for Dry Chemical Extinguishing Systems; and NFPA 17A, Standard for Wet Chemical Extinguishing Systems. Also included among these codes is the NFPA 10, Standard for Portable Fire Extinguishers, which dictates extinguisher inspection and maintenance procedures and recordkeeping as well as the maximum travel distances between hazardous areas and the placement of portable fire extinguishers in buildings. Often states adopt their individual standards, providing further regulations for how portable extinguishers should be hung and what height they should be installed.

Underwriters Laboratories ratings

The Underwriters Laboratories (UL) sets manufacturing guidelines and rates PFEs. Failure to comply with these guidelines can increase operating costs or damage an operator's credibility. The ratings are described using numbers preceding the class letter, such as 1-A:10-B:C. The number preceding the A multiplied by 1.25 gives the equivalent extinguishing capability in gallons of water. The number preceding the B indicates the size of fire in square feet that an ordinary user should be able to extinguish. There is no additional rating for class C because it only indicates that the extinguishing agent will not conduct electricity, and an extinguisher will never have a rating of just C.

Of particular importance to the industry is that OEM equipment must be used for replacement parts for the extinguisher to maintain its UL rating. As a result, the initial investment into a PFE could generate repeated sales over the course of that unit's lifetime. If parts are unavailable, replacement is recommended. Because PFEs have a projected service life of about 25 to 35 years, periodic replacement can be a source of demand; however, many late-model units can outlast this lifespan. Still, modern fire protection changes periodically, so replacements are

Operating Conditions

Regulation & Policy continued

recommended at shorter intervals on the basis of increased efficiencies achieved through innovation.

Industry Assistance

Level & Trend
The level of Industry Assistance is **Low** and the trend is **Steady**

The Fire Extinguisher Manufacturing industry receives no direct assistance. Some indirect assistance exists in the form of federal trade policies that encourage export sales or place tariffs on imports from overseas. Tariffs are usually applied toward the import of chemical preparations that are used as extinguishing agents. Currently, there are no implemented or proposed tariffs in place on fire extinguishers and fire-extinguisher parts, though select raw materials such as steel are under threat. It is yet to be seen the effects of these tariffs on industry prices and revenue.

Also, indirect assistance exists in federal guidelines that mandate the presence, maintenance and replacement of fire extinguishers in the work place. IBISWorld anticipates industry assistance to remain low and steady through the next five years.

The Fire Equipment Manufacturers' Association is an international trade association, which promotes industry practices, provides relevant education to industry employees and leads advocacy efforts, lobbying governments on safety code writing issues.

Key Statistics

Industry Data

	Revenue ($m)	Industry Value Added ($m)	Establish-ments	Enterprises	Employment	Exports ($m)	Imports ($m)	Wages ($m)	Domestic Demand	Value of private non-residential construction ($b)
2009	1,381.3	304.0	27	23	3,823	161.4	104.6	219.7	1,324.5	438.2
2010	1,305.9	306.4	25	21	3,490	170.3	125.3	213.6	1,260.9	366.3
2011	1,253.1	327.9	25	21	3,789	191.2	124.7	233.9	1,186.6	374.7
2012	1,284.7	336.8	29	25	3,844	213.3	120.9	234.1	1,192.3	423.1
2013	1,269.5	294.6	29	25	3,130	196.4	116.8	189.3	1,189.9	428.8
2014	1,191.0	269.2	22	19	2,738	197.5	120.1	167.9	1,113.6	474.0
2015	1,197.9	264.9	25	22	2,746	240.7	117.0	161.9	1,074.2	465.4
2016	1,177.4	254.7	23	20	2,674	220.0	116.1	154.6	1,073.5	446.4
2017	1,155.4	248.8	23	21	2,642	200.9	125.4	152.3	1,079.9	470.4
2018	1,203.3	259.1	24	21	2,717	196.5	145.7	157.6	1,152.5	492.9
2019	1,247.1	268.1	24	21	2,781	206.1	148.7	162.3	1,189.7	514.7
2020	1,274.8	273.8	24	21	2,819	211.4	151.2	165.2	1,214.6	521.5
2021	1,295.7	278.0	24	21	2,845	215.8	152.9	167.2	1,232.8	519.8
2022	1,318.2	282.2	24	21	2,869	221.5	153.6	169.2	1,250.3	527.2
2023	1,327.9	284.1	23	20	2,874	223.8	154.1	169.8	1,258.2	528.0

Annual Change

	Revenue (%)	Industry Value Added (%)	Establish-ments (%)	Enterprises (%)	Employment (%)	Exports (%)	Imports (%)	Wages (%)	Domestic Demand (%)	Value of private non-residential construction (%)
2010	-5.5	0.8	-7.4	-8.7	-8.7	5.5	19.8	-2.8	-4.8	-16.4
2011	-4.0	7.0	0.0	0.0	8.6	12.3	-0.5	9.5	-5.9	2.3
2012	2.5	2.7	16.0	19.0	1.5	11.6	-3.0	0.1	0.5	12.9
2013	-1.2	-12.5	0.0	0.0	-18.6	-7.9	-3.4	-19.1	-0.2	1.3
2014	-6.2	-8.6	-24.1	-24.0	-12.5	0.6	2.8	-11.3	-6.4	10.5
2015	0.6	-1.6	13.6	15.8	0.3	21.9	-2.6	-3.6	-3.5	-1.8
2016	-1.7	-3.9	-8.0	-9.1	-2.6	-8.6	-0.8	-4.5	-0.1	-4.1
2017	-1.9	-2.3	0.0	5.0	-1.2	-8.7	8.0	-1.5	0.6	5.4
2018	4.1	4.1	4.3	0.0	2.8	-2.2	16.2	3.5	6.7	4.8
2019	3.6	3.5	0.0	0.0	2.4	4.9	2.1	3.0	3.2	4.4
2020	2.2	2.1	0.0	0.0	1.4	2.6	1.7	1.8	2.1	1.3
2021	1.6	1.5	0.0	0.0	0.9	2.1	1.1	1.2	1.5	-0.3
2022	1.7	1.5	0.0	0.0	0.8	2.6	0.5	1.2	1.4	1.4
2023	0.7	0.7	-4.2	-4.8	0.2	1.0	0.3	0.4	0.6	0.2

Key Ratios

	IVA/Revenue (%)	Imports/ Demand (%)	Exports/ Revenue (%)	Revenue per Employee ($'000)	Wages/Revenue (%)	Employees per Est.	Average Wage ($)	Share of the Economy (%)
2009	22.01	7.90	11.68	361.31	15.91	141.59	57,467.96	0.00
2010	23.46	9.94	13.04	374.18	16.36	139.60	61,203.44	0.00
2011	26.17	10.51	15.26	330.72	18.67	151.56	61,731.33	0.00
2012	26.22	10.14	16.60	334.21	18.22	132.55	60,900.10	0.00
2013	23.21	9.82	15.47	405.59	14.91	107.93	60,479.23	0.00
2014	22.60	10.78	16.58	434.99	14.10	124.45	61,322.13	0.00
2015	22.11	10.89	20.09	436.23	13.52	109.84	58,958.49	0.00
2016	21.63	10.82	18.69	440.31	13.13	116.26	57,816.01	0.00
2017	21.53	11.61	17.39	437.32	13.18	114.87	57,645.72	0.00
2018	21.53	12.64	16.33	442.88	13.10	113.21	58,005.15	0.00
2019	21.50	12.50	16.53	448.44	13.01	115.88	58,360.30	0.00
2020	21.48	12.45	16.58	452.22	12.96	117.46	58,602.34	0.00
2021	21.46	12.40	16.66	455.43	12.90	118.54	58,769.77	0.00
2022	21.41	12.29	16.80	459.46	12.84	119.54	58,975.25	0.00
2023	21.39	12.25	16.85	462.04	12.79	124.96	59,081.42	0.00

Figures are in inflation-adjusted 2018 dollars.

SOURCE: WWW.IBISWORLD.COM

Jargon & Glossary

Industry Jargon

CLASS A FIRE Fires fueled by ordinary combustibles, such as wood, paper and cloth.

CLASS B FIRE Fires fueled by flammable liquids, such as oil-based paints, tars and solvents.

CLASS C FIRE Fires caused by energized electrical equipment.

CLASS D FIRE Fires involving combustible metals.

EXPELLANT A gas or liquid contained within a fire extinguisher that expels the firefighting agent.

HALON 1211 A colorless, faintly sweet smelling, electrically nonconductive liquefied gas which is a medium for extinguishing fires by inhibiting the chemical chain reaction of fuel and oxygen.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) A US trade association that creates and maintains private, copyrighted, standards and codes for usage and adoption by local governments.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSH An agency of the US Department of Labor that helps prevent work-related injuries, illnesses and occupational fatality by issuing and enforcing standards for workplace safety and health.

IBISWorld Glossary

BARRIERS TO ENTRY High barriers to entry mean that new companies struggle to enter an industry, while low barriers mean it is easy for new companies to enter an industry.

CAPITAL INTENSITY Compares the amount of money spent on capital (plant, machinery and equipment) with that spent on labor. IBISWorld uses the ratio of depreciation to wages as a proxy for capital intensity. High capital intensity is more than $0.333 of capital to $1 of labor; medium is $0.125 to $0.333 of capital to $1 of labor; low is less than $0.125 of capital for every $1 of labor.

CONSTANT PRICES The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using the current year (i.e. year published) as the base year. This removes the impact of changes in the purchasing power of the dollar, leaving only the "real" growth or decline in industry metrics. The inflation adjustments in IBISWorld's reports are made using the US Bureau of Economic Analysis' implicit GDP price deflator.

DOMESTIC DEMAND Spending on industry goods and services within the United States, regardless of their country of origin. It is derived by adding imports to industry revenue, and then subtracting exports.

EMPLOYMENT The number of permanent, part-time, temporary and seasonal employees, working proprietors, partners, managers and executives within the industry.

ENTERPRISE A division that is separately managed and keeps management accounts. Each enterprise consists of one or more establishments that are under common ownership or control.

ESTABLISHMENT The smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.

EXPORTS Total value of industry goods and services sold by US companies to customers abroad.

IMPORTS Total value of industry goods and services brought in from foreign countries to be sold in the United States.

INDUSTRY CONCENTRATION An indicator of the dominance of the top four players in an industry. Concentration is considered high if the top players account for more than 70 % of industry revenue. Medium is 40 % to 70 % of industry revenue. Low is less than 40 % .

INDUSTRY REVENUE The total sales of industry goods and services (exclusive of excise and sales tax); subsidies on production; all other operating income from outside the firm (such as commission income, repair and service income, and rent, leasing and hiring income); and capital work done by rental or lease. Receipts from interest royalties, dividends and the sale of fixed tangible assets are excluded.

INDUSTRY VALUE ADDED (IVA) The market value of goods and services produced by the industry minus the cost of goods and services used in production. IVA is also described as the industry's contribution to GDP, or profit plus wages and depreciation.

INTERNATIONAL TRADE The level of international trade is determined by ratios of exports to revenue and imports to domestic demand. For exports/revenue: low is less than 5 % , medium is 5 % to 20 % , and high is more than 20 % . Imports/domestic demand: low is less than 5 % , medium is 5 % to 35 % , and high is more than 35 % .

Jargon & Glossary

IBISWorld Glossary continued

LIFE CYCLE All industries go through periods of growth, maturity and decline. IBISWorld determines an industry's life cycle by considering its growth rate (measured by IVA) compared with GDP; the growth rate of the number of establishments; the amount of change the industry's products are undergoing; the rate of technological change; and the level of customer acceptance of industry products and services.

NONEMPLOYING ESTABLISHMENT Businesses with no paid employment or payroll, also known as nonemployers. These are mostly set up by self-employed individuals.

PROFIT IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company's profitability. It is calculated as revenue minus expenses, excluding interest and tax.

VOLATILITY The level of volatility is determined by averaging the absolute change in revenue in each of the past five years. Volatility levels: very high is more than ±20%; high volatility is ±10% to ±20%; moderate volatility is ±3% to ±10%; and low volatility is less than ±3%.

WAGES The gross total wages and salaries of all employees in the industry. The cost of benefits is also included in this figure.