CBI
Ministry of Foreign Affairs

Exporting sprockets to Europe

Although sprockets may seem insignificant, they play an important role in European industries such as automotive and machinery. In fact, the quality of the sprocket can determine the life of the roller or conveyor chain. Sprockets are used in a wide range of applications and come in many different sizes and shapes.
Exporters from developing countries who want to target the European market have two options: either partnering/subcontracting with European producers, or selling their products to European importers. It is relatively straightforward to make a competitor analysis, which should focus on finding and analysing competitors in four developing countries: China, Turkey, India and Mexico.

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Product description

A sprocket is a profiled wheel with teeth or cogs that mesh with a chain, track, or other perforated or indented material. Sprockets are applied in conjunction with drive, roller and conveyor chains. They are used either to transmit rotary motion between two shafts where gears are unsuitable or to impart linear motion to a track, tape, and so on. Different types of sprockets include:

- Stock pilot bore sprockets
- Double simplex sprockets
- Taper bore sprockets and bushes
- Plate wheels
- Adaptors and idler sprockets
- Special sprockets
- Conveyor chain sprockets

When sprockets are referred to in this survey, this concerns the Harmonised System codes in Chapter 8483, paragraph 90.

Product specifications

Specifications of sprockets as required by European buyers are described below. In addition, pictures 1-6 show some examples of sprockets sold in the European market.

Picture 1: Pilot bore sprocket	Picture 2: Double simplex sprockets	Picture 3: Taper bore sprocket
		
Picture 4: Idler sprocket	Picture 5: Conveyor chain sprocket	Picture 6: Segmented sprocket
		

Material and design

Material

Suitable sprocket materials should be selected according to the working conditions and requirements of the application. Proper selection will result in higher performance and better cost-effectiveness. Most sprockets designed for smooth running applications are produced from European Norms 8 (EN8) or 9 (EN9) steel alloys up to a certain size, which is generally up to 29 teeth. Over 29 teeth, the sprockets are generally produced in cast iron.
For both moderate and heavy shock loading, the smaller sprockets (up to 29 teeth) from EN8 or EN9 can either be hardened and tempered, or be made in case-hardened mild steel. Larger sprockets with over 30 teeth that endure moderate shock loading might be produced in mild steel or Meehanite®. For heavy shock loading, these larger sprockets can also either be hardened and tempered, or be made in case-hardened mild steel.
Roller chain is often used for high-speed power transmission. For such applications, standard sprockets should be used with fewer teeth that have been hardened at the tooth tips by high-frequency hardening.
Stainless steel is used in applications used in sectors including the food, pharmaceutical and marine industries.
Black oxide finish can be used for resistance to corrosion and long-lasting durability and dependability.

Design

Sprockets are made with different body styles and are dynamically balanced to ensure safe drive operation. Sprockets are of various designs, a maximum of efficiency being claimed for each by its originator. Sprockets typically do not have a flange, although some sprockets used with timing belts have flanges to keep the timing belt centred.
Sprockets are available with a number of variable features, which can include:

- Sprockets incorporating shafts;
- Welded or detachable hubs;
- Shear pin devices fitted;
- Necklace sprockets made up of chain plates and individual tooth sections for turning large drums or tables;
- Combination sprockets (two or more sprockets combined, having different pitch sizes and numbers of teeth);
- Sprockets in two or more sections; for instance, split sprockets or segmental sprockets.

Labelling and packaging

Sprockets can be packaged in a carton or a wooden box, depending on the size of the parts. The outer package should include the brand name and type number. The package for ocean transport is a wooden, steel or plastic pallet, wrapped in plastic sheeting and sealed with metal strips. The size of the boxes depends on customer requirements and preferences, and is also influenced by the weight per box and handling possibilities.
Packaging is always labelled, not only for the purposes of identification during transport but also to indicate the quantity, the weight, the products themselves and the producer's name.

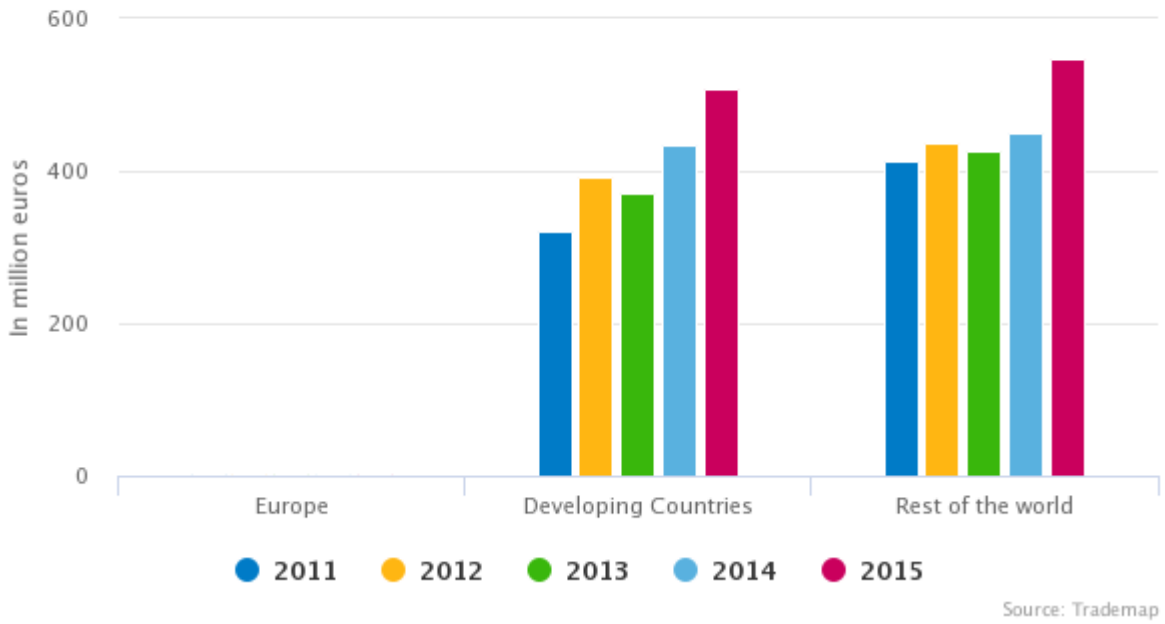
1 . Which European markets offer opportunities for exporters of sprockets?

Imports

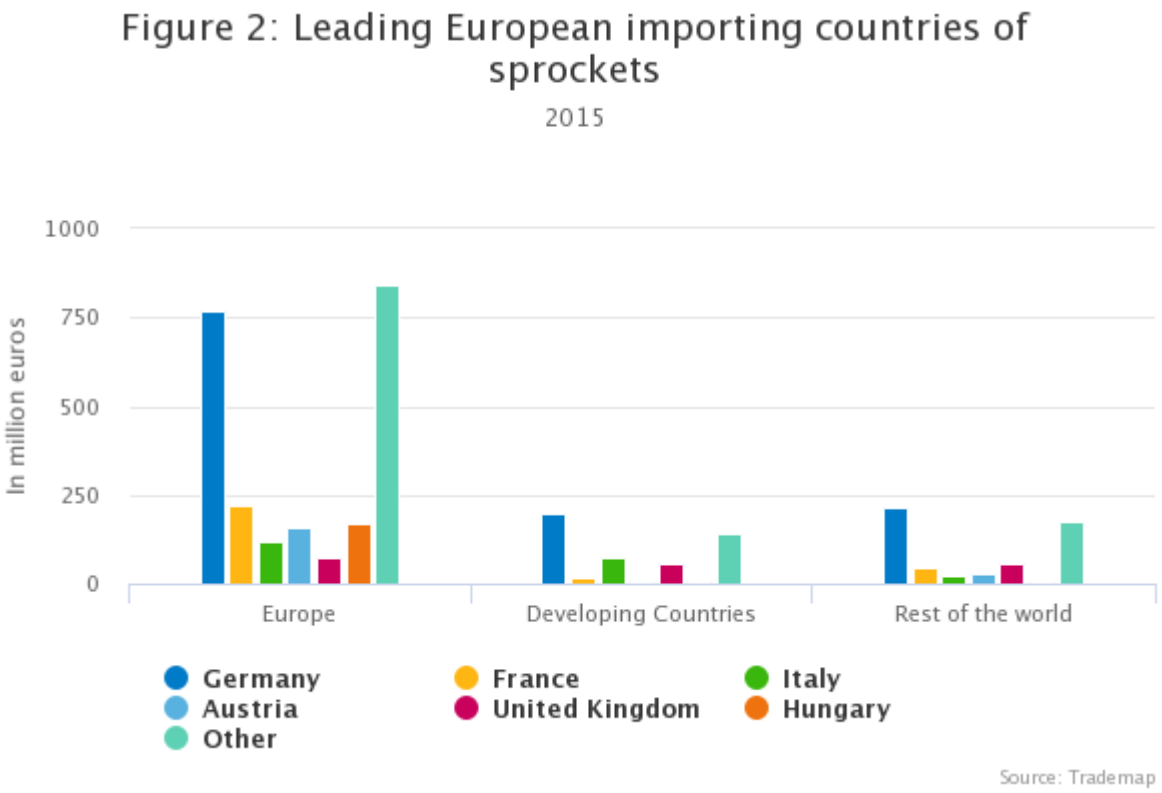
European import of sprockets increased by 4% per year between 2011-2015 to €3.4 billion. Sprockets were mostly imported from countries within Europe. However, the import from developing countries into the European Union grew more rapidly in the past few years (12% annually). The import share of European suppliers into the European Union dropped from 75% in 2011 to 69% in 2015, while the import share of the "Rest of the world" category grew from 14% to 16%. Over four years' time, the import share from developing countries increased from 11% in 2011 to 15% in 2015.

Figure 1: European import of sprockets by main origin

2011-2015



Representing a share of 35% of the total European Union imports, Germany is the largest importer of sprockets. This is unsurprising, as that country is home to a giant engineering and automotive industry. Germany is followed by France (8% share), while the remaining five focus countries are relatively close to each other (5-6% share). Germany showed the highest import from developing countries, reaching €200 million. It is followed by Italy (€72 million) and the United Kingdom (€59 million). Germany also showed the largest absolute growth (€52 million over four years' time) in imports from developing countries. The import of sprockets is expected to demonstrate slight growth in the next few years (in the range of 0-2%).



Leading suppliers

Germany, Italy and China are the leading suppliers to Europe, together representing 45% of the total European import of sprockets. Other leading suppliers are the United States (6% share), France (5%) and Belgium (4%). Among these six suppliers, China showed the highest annual growth over four years' time (13%), followed by the United States (5%). Other countries that showed a high annual growth are India (17%), Turkey (10%) and Poland (7%). However, the exported value of these countries remains relatively low in comparison with the main supplying countries.

Among the leading suppliers to the six focus countries, China and Turkey dominate the list of suppliers from developing countries. India is especially strong in exports to Italy and the United Kingdom. Mexico is strong in exports to the United Kingdom, while Brazil exports to Germany and France.

Tips

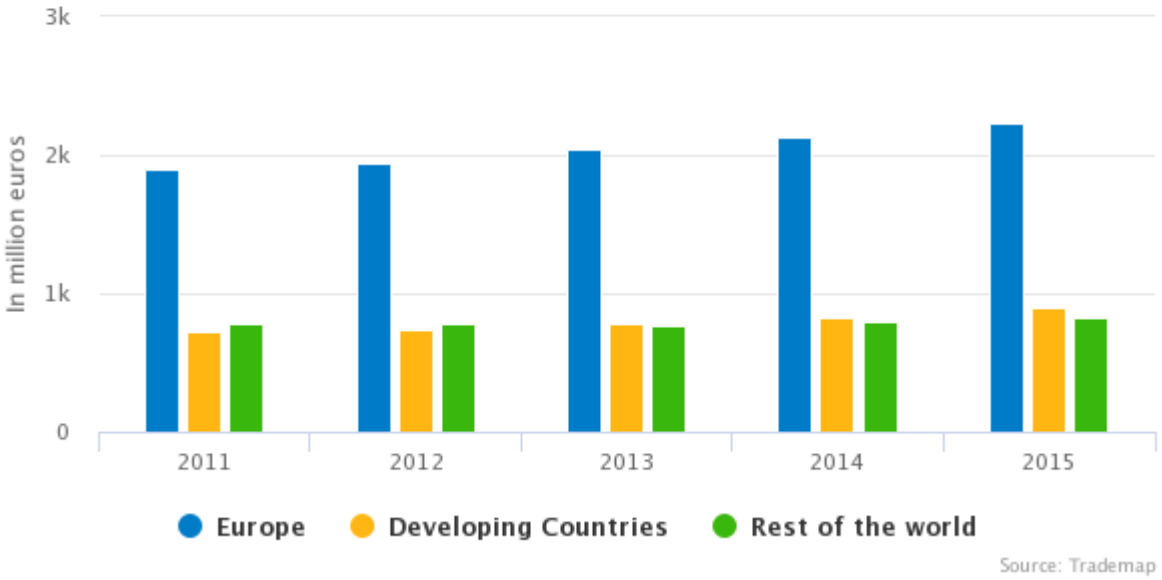
- Benchmark your company against your peers from China, Turkey, India and Mexico as well as those from European countries. Several factors can be taken into account, such as market segments served, perceived price and quality level, countries served, and so on. One source that may be used to find exporters of sprockets per country is ITC International Trade Statistics (for which you have to register first).
- You can also use Eurostat to obtain detailed trade statistics about the industry.
- You can use trade fair databases such as Eventseye or Auma to find relevant trade fairs in Europe. The most important trade fair for you is Hannover Messe in Germany. A fair dedicated to MDA (Motion, Drive & Automation) is part of the Messe every odd year. Other interesting trade fairs are Drives and Controls and Subcon (United Kingdom); MECSPE, Sub-fornitura, SPS IPC Drives Italia and M&MT (Italy); and Midest in France.

Exports

The total European exports of sprockets increased by 4% per year between 2011-2015 to €4 billion. Exports of European sprockets were mainly destined for other European countries. However, the export to developing countries showed a higher annual growth (6% per year on average). In 2015, European exports to developing countries amounted to €904 million, 23% of the total European exports. In the coming years, the share of exports to developing countries is expected to remain within the same 20-25% range as it has in the past few years.

Figure 3: European export of sprockets to main destinations

2011-2015



Germany is the largest European exporter of sprockets (€1.9 billion in 2015; 49% of total European exports), followed by Italy (9% share). Other important exporters are Belgium (6% share), France (5%), Austria (5%) and Poland (4%). China is the largest destination for European exports in the category of developing countries. The European exports of sprockets are expected to experience a slight growth (in the range of 0-2%) in the next few years.

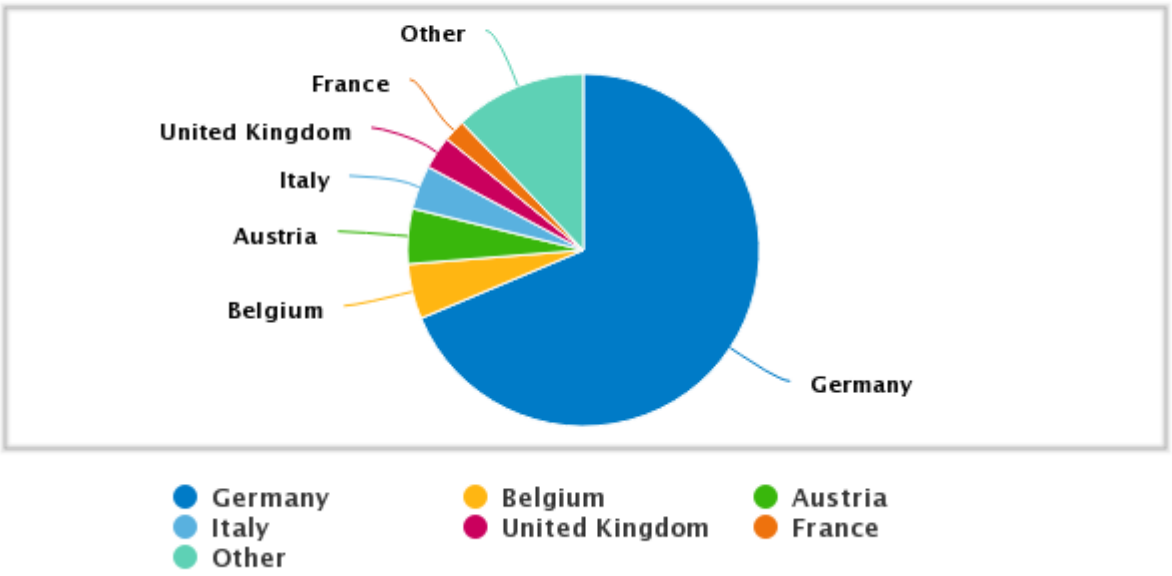
Production

Production of sprockets in Europe totalled €4 billion in 2015, thanks to a continuous average annual increase of 5% between 2010-2014. The quality of sprockets produced in Europe is basically medium to high or very high. Major reasons for the growth of the sector include increasing spending activity in the end-user industries, which led to a growth in demand (with the exception of 2013) as well as in exports. Germany is the largest sprockets producer in Europe (68% share). Other important producers include Belgium (5% share), Austria (5%), Italy (4%), the United Kingdom (3%) and France (3%).

European industrial production is set to increase further in 2015, following strong year-to-year gains in 2013 and 2014. Signals of progress in the production of industrial machinery will continue to create favourable conditions for industrial suppliers in and to Europe in 2015. Positive factors (for example, a low inflation rate and a slowly improving level of industrial investments) are likely to support these positive developments.

Figure 4: Main European producers of sprockets

2014



Source: Eurostat Prodcom

Tips

- You can find more information about the sprockets sector on European associations such as the European Committee of Associations of Manufacturers of Gears and Transmission Parts and the EMEA Power Transmission Distributors Association.
- You can also find information about the sector and the companies in different countries by visiting the websites of sector associations and federations such as VDMA and VTH Verband Technischer Handel (Germany); ANIMA (Italy); AGORIA and Belgitrans (Belgium); and the British Gear Manufacturers Association and the Engineering Industries Association (the United Kingdom). You can use Google Translate to convert the website to your own language.
- Commisceo Global offers a lot of information about differences in business cultures and etiquette. You should pay some attention to this aspect before you start exporting to Europe.

Demand

European demand totalled €3.4 billion in 2014, following an average annual growth of 7.0% between 2010-2014. After a continuous growth in 2010-2012, the apparent demand decreased slightly from €3.2 to €3.1 billion in 2013. This drop was caused by a weak performance in some important market segments, especially automotive. Afterwards, demand recovered in 2014-2015. Germany and the United Kingdom are the largest markets for sprockets, together representing 65% of the total European market. Other countries with a high demand are Austria (5% share), Hungary (5%), Belgium (4%) and France (4%). Of these countries, France showed the highest annual growth on average (19%) between 2010-2014. It is followed by Germany (10% annual growth on average) and Hungary (9%).

Germany

Germany is the number one producer in virtually every industry in Europe. It is well known for its output of machinery, cars and electronics.

The United Kingdom

Key manufacturing sectors in the United Kingdom include:

- Aerospace
- Automotive
- Chemicals
- Oil
- Defence equipment
- Electronics
- Food and beverage processing

The United Kingdom has a long tradition of producing machinery and equipment. Important market segments include agricultural machinery and construction, quarrying and mining machinery.

Austria

Most industrial enterprises in Austria are relatively small on the international scale. Austrian companies often have strong ties with German companies. In machinery building, Austria is especially strong in the field of wood-processing equipment.

Italy

Italy’s main industries are:

- Iron and steel
- Machinery
- Chemicals
- Textiles
- Food processing
- Motor vehicles
- Footwear
- Clothing
- Ceramics

After Germany, Italy is the second-largest machinery producer in Europe, producing virtually all categories of machinery.

Belgium

Key manufacturing sectors in Belgium include:

- Engineering and metal products
- Motor vehicle assembly
- Transportation equipment
- Scientific instruments
- Food and beverage processing
- Chemicals
- Basic metals
- Textiles
- Glass
- Petroleum

Belgium has a relatively small, but highly innovative machinery and equipment sector. The sector is very much export driven. Important market segments include agricultural machinery and the textile machinery industry. The latter, for instance, consists of around 50 companies active in machinery for indoor textiles, garments, and technical textiles.

France

France’s leading industries produce:

- Machinery

- Chemicals
- Automobiles
- Metals
- Aircraft
- Electronics equipment
- Textiles
- Food

Most machinery production is focused on either agricultural machinery or machinery for textile, apparel and leather.

Tips

- Exporters from developing countries could concentrate on market segments that are strongly represented in the focus countries. Specialisation in any of those segments may give exporters a competitive advantage, as there is an increasing demand for customised solutions. European importers therefore prefer specialised suppliers that are able to offer customer support and joint engineering in specific market segments.
- You can also use international magazine sources such as Power in Motion, Power Transmissions and Power Transmission Engineering to read about the latest trends and developments in the sprockets industry. Other magazine sources from leading countries include Industrie, Industrie Anzeiger, Industrieweb and Maschinen Markt (Germany); Connecting Industry, Industrial Technology, The Engineer and Drives & Controls (the United Kingdom); Axes Industries (France); and Industrieweb, Machinery and Metalware and Maschinen Markt from Austria.

2 . What trends offer opportunities on the European market for sprockets?

As sprockets are used in applications where movement and energy are key, it is obvious that most trends are related to environmental and/or technological issues.

Developments in chains stimulate the sprockets industry

As chains are used in applications where movement and energy are key, it is obvious that most trends are related to technical innovation and improving functionality. Several developments are coupled with energy efficiency improvements.
The continuous innovation and development of chains also drives the sprockets industry. Low maintenance or maintenance-free chains require sprockets that are made of new steel grades or with new coating technologies and sinter components. New lubricants or lubricant-free solutions are an important industry trend. This development is especially important in industries with frequent conveyor applications.
New developments of sprockets for the automotive industry are related to low maintenance and lubrication-free chains. In addition, CO2 reduction and fuel economy are growth drivers. The automotive industry is also keen on building ever lighter vehicles. Depending on the segment, a premium of three to ten euros per kilogram of weight saved can be expected for internal combustion engines. As a result, the sprockets and timing chains of tomorrow are smaller, lighter and quieter yet they are powerful and produce a high performance.

Increasing demand for precision parts

Apart from functionality, the experts devote attention to precision and reproducibility. Particularly in the case of sprockets, the outer contour has to be absolutely symmetrical to the interior hole and

transformer. The advantages of fine-blanking technology become obvious here, because the entire processing occurs in one position or sometimes even in one press stroke. Obviously, accurate parts will continue to be in high demand.

Tips

- Exporters from developing countries recognising this shift should invest in R&D to develop cost-effective solutions that are also energy efficient.
- Exporters from developing countries can greatly improve their competitiveness if they develop low-maintenance sprockets while they focus their export marketing toward lowering maintenance costs for potential buyers.
- Exporters from developing countries can choose to focus on several market segments. One strategy can be price competitiveness, supplying to all market segments. However, the reality is that the quality of the sprocket will determine the life of the chain; this should be the message for all producers of quality sprockets.
- Producers aiming for a specific industry should utilise sprockets according to the industry requirements mentioned.

Increasing environmental consciousness

Environmental aspects are very much influencing the chain drive industry. These aspects concern the development of new products and the implementation of new manufacturing processes. The results of these actions are reflected in chains and sprockets designed for achieving better energy efficiency, lubrication-free technology which saves resources, and maintenance work and noise absorption systems for the benefit of people and the environment.

Tip

- Exporters from developing countries could improve their chances by producing solutions that help prospective European buyers to reduce environmental hazards.Legal requirements

3 . What requirements should sprockets comply with to be allowed on the European market?

Requirements can be divided into (1) legal requirements, which you must meet in order to enter the market and (2) non-legal requirements, which most of your competitors have already implemented; in other words, which you need to comply with in order to keep up with the market. See our study of EU buyer requirements for motion control for a general overview of requirements. Below are the requirements that apply specifically to sprockets.

For transmission parts in general (and therefore also sprockets), no specific legal requirements apply. As soon as the transmission part becomes a component of a finished product, the exporter has the evident obligation to export a safe product to Europe.

Standards

For finished products, the directive on liability for defective products (Directive 85/374/EEC)

applies. The Product Liability Directive states that the European importer is liable for the products put on the European market. The European importer, however, can in principle pass on a claim to the producer/exporter.

Packaging and liabilities

Note that there is also non-product-specific legislation on packaging and liability that applies to all goods marketed in the EU.
For wood packaging materials used for transport, including dunnage (Directive 2000/29/EC), Europe sets requirements for materials such as packing cases and boxes. In practice, this means that the wood must have undergone heat treatment or been fumigated with methyl bromide.
Another packaging-related directive is the general directive about packaging and packaging waste. This directive prescribes the marking of the kind of packaging material used and the maximum levels of heavy metals in the packaging material.

Duties

For sprockets, a 5.7% duty is levied on European imports from third countries. Several countries benefit from a preferential 0% tariff; for example, Indonesia, Pakistan, Vietnam, the Philippines, Bosnia and Egypt. The TARIC database shows more details for these products in Chapter 8483. Note that it is only possible to claim a preferential tariff treatment with a Certificate of Origin.

Tips

- The importance of customer satisfaction should not be underestimated. Of course, customers consider a good quality of the products important, but they also attach great value to compliance with delivery times and delivery volumes.
- Make sure that your wood packaging material qualifies for the European market. If you are unsure, ask your wood packaging materials supplier for clarity. Your wood packaging material supplier should take any further action required in order to comply with the Directive. If the supplier is unable to do so, you may be able to switch to another supplier.
- Exporters from a country with a preferential 0% tariff have a small competitive advantage over competitors from countries without such a preferential tariff.
- You can use the EU Export Helpdesk, the ITC Market Access Map and the ITC Standards Map for more information on gaining access to the European market.

Non-legal requirements

The customer’s main requirements will be related to the sprocket itself, as its design, material, dimensions and finishing must meet the customer’s specifications. Worldwide, there are many standards applying to sprockets and chains; they all describe the tooth profile of the sprockets and most of them comply with the ISO standard (see Tips below).
All these issues are key in the sample phase. If the customer accepts the samples and all other conditions have been agreed, the contract can be signed. After this, the main challenge for the suppliers is to deliver the products according to the agreed specifications, delivery times and volumes.

Material and testing requirements

For material requirements, the following can be said in general. The metal that is used must be covered by a national or international standard and approved by a certificate. In a foundry or forge, the material must be melted or forged in such a way that – after the casting process – the material meets the material standard, which can be stated in an EN10204 - type 3.1 certificate. This type of

certificate is internationally accepted.
In addition, for highly demanding applications, the customer may also have testing requirements such as non-destructive testing (NDT) surface (magnetic testing or MTI, penetrant testing or PTD) and section (ultrasonic testing or UT and X-ray testing or RT) tests.

Tips

- More details can be found in the ISO Catalogue; click on “TC 100” (Chains and chain sprockets for power transmission and conveyors) for an overview of ISO standards.
- See our 10 tips for doing business with European buyers of motion, drives, control and automation and our 10 tips for finding buyers in the motion control sector. These tips also offer more information on which topics are decisive for European buyers when searching for (new) suppliers.

4 . Through which channels can you get sprockets on the European market?

Producers of sprockets from developing countries have three main options for entering the European market: through importers, chain manufacturers or sprocket manufacturers. An explanation of each type of prospect is given below, including a few examples per type and per focus country.
Europe is home to several interesting players. As each company is unique in terms of its own customers, market segments and products, the profile of the potential partner is very important. You are very likely, however, to find a match.

Producers

There are a few producers in Europe that have specialised in sprockets. Unsurprisingly, such specialisation is especially possible in large markets such as Germany and Italy. Examples of specialised manufacturers are Wipperman and KettenWulf (Germany); SIT (Italy); B&W Klaver and Verbaan (the Netherlands); and Cross + Morse (United Kingdom).
Most companies in Europe, however, are producing or at least offering a range of power transmission parts. In several cases, such generalists do not produce the whole range themselves, but they include products from other manufacturers in order to offer a complete range of transmission parts and products to their customers. Examples of such generalists in some of the European focus countries are Bea Ingranaggi and SATI (Italy); Groupe Fair and Itafran (France); Dunlop (United Kingdom); and ISG Lettink (the Netherlands).

Importers and distributors

Most importers can be classified as generalists, as the majority of these sell a very broad range of power transmission parts and products. Examples of such importers in the European focus countries are the following:

- Germany: Helbing & Partner, Werthenbach, Mädler and Tewa Antriebstechnik;
- Italy: Bianchi Cuscinetti, Intec, WMH Latsch, CDC group and Petean;
- France: IPH, Baret Group, Azur Roulements, HPC and Inter Appro;
- United Kingdom: Hayley, Acorn, BRT Group and NBC Group;
- The Netherlands: Ammertech, Angst+Pfister and Bruin Aandrijftechniek.

A few importers/distributors have specialised in chain drives, whether or not in combination with belt drives; often, both are designed for transmission and conveyor belt applications. Examples of such specialists are:

- Mangold - German importer and distributor of chain and belt drives;

- Urny Antriebselemente - German importer and distributor of chain drives;
- KIM - Dutch importer of chain drives and related products;
- KTN - Dutch importer and distributor of chain and belt drives.

5 . What are the end-market prices for sprockets?

To establish an export price, you need to consider many of the factors involved in pricing for the domestic market:

- Aim to charge the price that the market will bear, and keep in mind the quality-price ratio of your products. This ratio should be in line with competitor prices.
- Pricing is a mix of knowing your domestic costs and calculating costs that you will incur in delivering and supporting your activities in a foreign market.
- Use contracts with variable material costs. It is important to set the reference index for the fluctuations in agreement with the buyer. You can use, for example, the steel index of the London Metal Exchange.
- Bear in mind that it is not easy to increase prices once you have agreed to deliver at a certain price. The negotiated price should never be below your cost price (except for the first order; in this case, you may accept a loss if larger quantities and thus lower costs are expected for the following orders). No European buyer will accept an unreasonable/unexpected price increase after the first order.
- The negotiated price depends on the delivery conditions, the means of payment, credit terms and currency risks, quantities and the means of transport.
- Exchange rates fluctuate. You can cover this risk by including the currency risk in the contract. This practice has been accepted in international business transactions for a few years.

Another very important issue is the responsibilities and rights relating to the pattern and tooling. The following pattern and tooling issues should all be covered in the contract: financing of manufacturing and possible repairs, guaranteed lifetime, ownership and storage.

Tips

- Use contracts with variable material costs.
- Include the currency risk in the contract.
- Include the responsibility and rights related to the pattern and tooling in the contract.

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