



## Practical market insights into your product

# Gums and resins for the German market

Germany is a leading importer of gums and resins in Europe. Gum arabic, Locust Bean Gum (LBG), frankincense and myrrh are valuable as natural ingredients with unique properties. Gum arabic and LBG stabilise and thicken, whereas frankincense and myrrh are mostly valued for their fragrance. They are versatile ingredients with a wide range of applications in the food, cosmetic and health products industries. As each of these applications requires very specific qualities of the gums, you need to pay extra attention to strict sorting and grading.

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## PRODUCT DESCRIPTION

The product identity and classification of natural gums and resins is complex. Difficulties in identification arise from the variability of plant species and sources used for procurement of raw material.

Both gums and resins are solid/semi-solid substances. Gums are miscible in water and insoluble in liquids that dissolve resins, while resins – complex mixtures of organic compounds called terpenes including oleoresins and balsams – are soluble in certain organic solvents, but insoluble in water.

Next to providing information on the German market for gums and resins in general, this factsheet focuses on two specific gums as well as two specific resins:

### Gums

1. Gum arabic (exudate gum)
2. Locust Bean Gum (seed gum)

### Resins

3. Myrrh
4. Frankincense

For the purpose of chemical classification, myrrh and frankincense are classified as resins, although both contain a certain amount of gum ingredients. This is why both resins are sometimes also called “gum-resins” to describe a resinous material, which contains some gum.

#### ACACIA SENEGAL TREE



Source: FAO

#### GUM ARABIC DERIVED FROM ACACIA SENEGAL



Source: CBI

#### 1. Gum arabic and other Acacia gums

Gums are derived from trees. The tree sources for gum arabic grow in the gum belt of Africa, which stretches from Senegal in the West to Somalia in the East.

Gum arabic is the dried exudation obtained from the stems and branches of Acacia trees, primarily *Acacia senegal* (L.), *Willdenow var. senegal* (synonym: *Acacia vereke*) or closely related species (known by the local population of Sudan and surrounding countries as “hashab” or “kordofan”). After the bark of the tree is cut, gum exudates naturally in 3-8 weeks. The hardened sap is then regularly collected by pastoralists from the dispersed trees. Generally, the collection of gums and resins provides a source of income for pastoralists in areas with few other natural resources.

The designation “Gum arabic” is commonly taken to mean the gum from any Acacia species, therefore sometimes also referred to as “Acacia gum”. This leads to a lack of clarity in definition. For example, many people also use the name “gum arabic” for gum from *Acacia seyal* (synonym: *Vachellia seyal var. seyal*). This gum, which has different properties than the gum obtained from the Acacia species mentioned above, also has another common name in Sudan and surrounding countries: “gum talha”.

Gum arabic from *A. senegal* is a pale to orange-brown coloured solid, which breaks with a glassy fracture. For this reason, it is also known as “hard gum” whereas gum from the *A. seyal* tree is known as “flaky gum”.

The gums consist of a mixture of arabinogalactan oligosaccharides, polysaccharides and glycoproteins. It is soluble in water and forms solutions over a wide range of concentrations without becoming highly viscous.

European food and beverage manufacturers use gum arabic mainly as an emulsifier and for its ability to stabilise a wide range of products.

Codes relevant for export of gum arabic:

- Harmonised System (HS): 130120 – Gum arabic
- E-number: E414
- Chemical Abstract Service (CAS) Registry Number: 9000-01-5<sup>1</sup>
- EC No.: 232-519-5
- Codex Alimentarius: SIN No 414, INS No 414

<sup>1</sup> A Chemical Abstract Service (CAS) Registry Number provides an unambiguous way to identify a chemical substance or molecular structure when there are many possible systematic, generic, proprietary or trivial names.

## CERATONIA SILIQUE TREE



Source: Global Biodiversity Information Facility

## LOCUST BEAN GUM



Source: ingredientsolutions.com

## 2. Locust Bean Gum

Locust Bean Gum (LGB) – also known as carob gum – is a vegetable gum extracted from the seeds of the tree *Ceratonia siliqua* (L.) Taub, most commonly known as carob tree or St. John's bread. The carob tree is native to the Mediterranean region stretching from Southern Europe and Northern Africa to the Middle East into Iran. The gum is obtained from the endosperm of the carob's seed and is a white to yellowish powder without odour.

LGB consists of high-molecular-weight hydro colloidal polysaccharides, described chemically as galactomannan. Therefore, it is widely used as a gelling and thickening agent in the food industry.

The gum is partly dispersible in cold water and totally dispersible in hot water, while it can be converted to a gel by adding small amounts of sodium borate.

Codes relevant for export of LBG:

- Harmonised System (HS): 13023210 Mucilages and thickeners, whether or not modified, derived from locust beans
- E-number: E410
- Chemical Abstract Service (CAS) Registry Number: 9000-40-2
- EC No.: 232-541-5
- Codex Alimentarius: INS No. 410

## 3. Myrrh

Myrrh resin is a hardened reddish-brown exudate from the tree species *Commiphora myrrha* (Nees) Engl. (synonym: *Commiphora molmol*). These small trees with short thorny branches grow in Yemen and Eastern Africa (Somalia, Ethiopia and Eritrea). Other species of *Commiphora* also yield resins. However, these are considered by German importers as adulterants which are inferior to myrrh. Exporters must take care to determine the exact source (i.e. species) of myrrh to prevent such adulteration.

Myrrh trees are cut in order to regularly harvest their "bleeding" resins. They are not cultivated, but are rather scattered around a vast territory. The harvesting is mainly done by local pastoralists.

Myrrh consists of water-soluble gum, alcohol-soluble resins and volatile oil. The volatile oil can be extracted by steam-distillation and consists primarily of sesquiterpenes and triterpenes. Myrrh also contains tannins. The resin and its derivatives, such as its essential oil, have a wide range of applications such as fragrances, mouthwashes and skin conditioning products.

Codes relevant for export of myrrh:

- Harmonised System (HS): 130190 – Lac; natural gums, resins, gum-resins and oleoresins (for example, balsams) other than gum arabic
- Chemical Abstracts Service (CAS): 9000-45-7
- EC No.: 232-543-6
- EINECS: 232-543-6
- FEMA: 2765

Codes relevant for export of myrrh essential oil:

- Harmonised System (HS): 3301 29 41 (Essential oils other than those of citrus fruit, mint, clove, niaouli and ylang-ylang; not deterpenated)
- Chemical Abstracts Service (CAS): 8016-37-3
- FEMA: 2766
- UN no.: 1169

## COMMIPHORA MYRRHA TREE



Source: Steenbergs.co.uk

## MYRRH DERIVED FROM COMMIPHORA MYRRHA



Source: Steenbergs.co.uk

#### 4. Frankincense

Frankincense is an oleogum-resin exudated by several *Boswellia* species including *Boswellia carterii* Birdw., *Boswellia papyrifera* (Del.) Hochst. and *Boswellia neglecta* S. Moore. Frankincense is also commonly called "olibanum". Since frankincense from different species have different properties, exporters who can determine the exact source (i.e. species) of their frankincense can offer extra value to German buyers.

The collection of frankincense is similar to that of gum arabic and myrrh. It often involves scrubbing the bark of the trees which grow in dry areas to cause exudation of the gum-resin which can be collected at a later moment. In some areas, collectors only tap naturally exudated resin. The various *Boswellia* trees that are sources for frankincense mainly grow in the gum belt in Africa (Ethiopia, Somalia and Sudan) and India.

Steam-distillation of the gum-resin yields frankincense essential oil. Solvent extraction of the gum-resin, which is up to 75% soluble in alcohol, yields a resinoid. Filtration and vacuum concentration of the resinoid (i.e. alcohol solution) yield a resin absolute.

Codes relevant for the export of frankincense:

- Harmonised System (HS): 130190 – Lac; natural gums, resins, gum-resins and oleoresins (for example, balsams) other than gum arabic
- Chemical Abstracts Service (CAS): 8050-07-5 (olibanum)
- EC No.: 232-474-1 (olibanum)
- INCI name: Olibanum
- FEMA: 2765

Codes relevant for the export of frankincense extract:

- Harmonised System (HS): 3301 30 – Resinoids
- Chemical Abstracts Service (CAS): 89957-98-2 (*Boswellia carterii* extract) and 89957-99-3 (*Boswellia papyrifera* extract)
- EC No.: 289-620-2 (*Boswellia carterii* extract) and 289-621-8 (*Boswellia papyrifera* extract)

Codes relevant for the export of frankincense essential oil:

- Harmonised System (HS): 3301 29 41 – Essential oils other than those of citrus fruit, mint, clove, niaouli and ylang-ylang; not deterpenated
- Chemical Abstracts Service (CAS): 8016-36-2 (oil of *Boswellia carterii*)
- EINECS: 232-474-1
- FEMA: 2816
- UN no.: 1169

##### BOSWELLIA PAPYRIFERA TREE



Source: FAO

##### FRANKINCENSE DERIVED FROM DIFFERENT BOSWELLIA SPECIES



Source: Takasago

## PRODUCT SPECIFICATIONS

As gums have many different uses and suitability of gums for each of these uses depends largely on product specifications, a thorough understanding of the factors determining your product's specifications is crucial. This requires that exporters can provide botanical identification to determine the exact source of their gum. For example, in the gum arabic trade, the quality of gum from *Vachellia seyal* trees is generally considered as inferior to gum from *Acacia senegal* trees. Similarly, myrrh from *Commiphora myrrha* trees is considered to be the only true myrrh, while gums from other *Commiphora* tree species are considered as adulterants.

**QUALITY****General**

- General specifications for food additives including gum arabic and LBG are defined by the European Commission in Regulation 231/2012 and can be found in Codex Alimentarius. Frankincense and myrrh are not allowed for use in food as resins. Their essential oils could be used as flavouring agents, but this is uncommon due to their high price.
- The main chemical constituents of the gums and resins in this study are identified in the table below:

**TABLE 1: INDICATION OF MAIN CHEMICAL CONSTITUENTS OF SELECTED GUMS AND RESINS**

Gum/resin	Major chemical constituents	Sources
Gum arabic (Acacia senegal)	Galactose, arabinose, glucuronic acid, rhamnose	Source: FAO, 1995
Myrrh (Commiphora myrrha)	30-60 % water-soluble gum, 20-40 % alcohol-soluble resin and 9-17 % volatile oil.  Essential oil constituents: Furanoeudesma-1,3-diene (34 %), furanodiene (20 %), linaldiene (12 %), $\beta$ -elemene (8.7 %), germacrene-B (4.3 %)	Source: Hanuš, Řezankab, Dembitskya and Moussaieffa, 2005
Frankincense (Boswellia papyrifera)	30–60 % alcohol soluble resins (diterpenes, triterpenes), 30-65 % polysaccharides (gum), 5-10 % essential oils (62 % ester, 15 % alcohol, 10 % monoterpene hydrocarbons, 7 % diterpenes, sesquiterpenes).  Essential oil constituents: octyl acetate (56 %), $\beta$ -elemene (29 %), caryophyllene oxide (21 %), n-octanol (8.0 %), limonene (6.5 %), linalool (3.2 %), $\alpha$ -pinene (2.6 %), n-hexyl acetate (1 %).	Source: Comparative Phytochemical Analyses of Resins of Boswellia Species (B. papyrifera (Del.) Hochst., B. neglecta S. Moore, and B. rivae Engl.) from Northwestern, Southern, and Southeastern Ethiopia, 2014
Locust Bean Gum (Ceratonia siliqua)	Mannose (73-86 %), galactose (14-27 %)	Source: FAO, 2008

- Buyers often also determine the quality of gums and resins on a more subjective basis, looking at appearance (colour and viscosity) and aroma. Buyers generally prefer a light colour and minimum odour for gums with applications as hydrocolloids (e.g. thickeners). Buyers in the fragrance industry generally prefer a light colour as well, but often need a strong odour (i.e. high volatile oil content).
- Grading systems are used to sort gums and resins, to obtain a uniform product quality per grade. Price also differs depending on the grade available. Example of a grading system:

**TABLE 2: GRADING SYSTEM FOR FRANKINCENSE (BOSWELLIA PAPYRIFERA) IN TIGRAY, ETHIOPIA**

Grade	Description
1A	Size: > 6 mm; white
1B	Size: > 6 mm; creamy white
2	Size: > 4 mm < 6 mm; white
3	Size: > 2 mm < 4 mm; mostly white
4 – special	Any size; brown
4 – normal	Any size; black
5	Powder and bark

Source: CIFOR, 2011

**TIP:**

- Work together with a local university department to test your gum or resin. They can help determine the chemical composition of the gum or resin to be included in your product documentation.

**Quality management**

Pre-harvesting, harvesting and post-harvesting practices (including processing) affect quality of gums and resins. Exporters are responsible for the product they export and must often play an active role in raw material collection.

**TIPS:**

- Prevent contamination by e.g. sand, stones and undesired plant parts by training collectors to cut properly, use clean containers, keep storage rooms and equipment clean, and clean the gums or resins if necessary. Refer to the Good Practices for Gums of the Association for International Promotion of Gums (AIPG) for more details.
- As an alternative to the Good Practices for Gums, the IN2NI network provides Standard Operating Procedures (SOPs) and WINs (Working Instructions) for resource management and, importantly, resource use. At the resource use level, the SOPs and WINs address the following:
  - Pre-harvest
  - Harvest
  - Post-harvest
  - Sales communication
- Minimise variation in quality a lot by following strict grading and sorting standards for raw materials selection. Size and colour are major grading criteria for the exudate gums and resins next to impurity content and source area.
- Standardise and minimise significant variations in your product's quality by closely monitoring collection/harvesting practices through regular inspections and by blending gums or resins from different harvests (e.g. early and late harvests, or different areas). Always make sure that the quality of the standardised gums or resins (blend) matches the requirements of your buyer.
- Purify the product to improve its quality. For example, purify gum arabic using dry steps such as selection, kibbling, sieving and mechanical pulverisation of raw gum to produce a fine powder easily soluble in water. Improved purification requires more technology. After dissolution in water, remove insoluble matters (mineral and vegetable) by filtration and sterilisation of the gum syrup. Evaporate the water by spray-drying.
- Be clear on what quality you can supply continuously. Once you develop a quality standard, you must be able to maintain that same level of quality, also when up scaling your production.
- Prevent adulteration and contamination by foreign materials to preserve your reputation. Importers regularly analyse products for adulteration.



### **Labelling**

Labelling of gums and resins for export is mandatory and mainly serves traceability and safety during transport and storage.

- As an exporter, facilitate traceability of individual batches with markings on each container and registration in an administrative system, whether they are produced by blending or not.
- Use the English language and EU measures (e.g. kilograms) for labelling unless your buyer has indicated otherwise.
- Labels must include the following:
  - Product name
  - Batch code
  - If the product is destined for use in food products
  - Place of origin
  - Name and address of exporter
  - Date of manufacture
  - Best before date
  - Net weight
  - Recommended storage conditions
- Organic, Kosher and Halal markings are optional.
- For **organic** certified gums specifically: add name/code of the inspection body and certification number.
- If you export essential oils from resins, refer to CBI's Product Factsheet '[Resin oils for cosmetics in Europe](#)' for specific information on labelling for essential oils derived from gum-resins. Essential oils for cosmetics are regarded as chemicals and are subject to more strict labelling requirements.

### **Packaging**

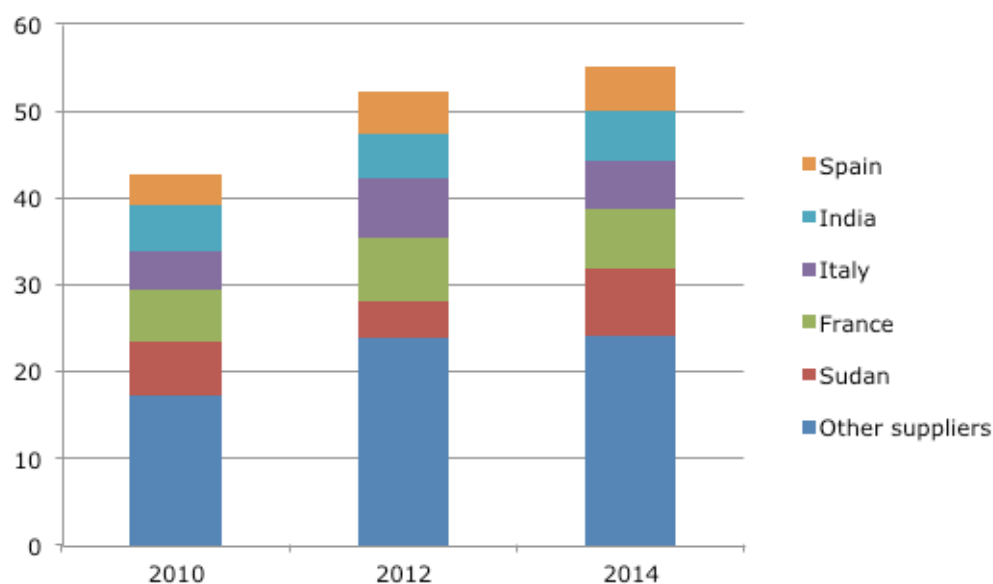
- Always consult your buyer for specific packaging requirements.
- Facilitate the re-use or recycling of packaging materials by, for example, using containers of recyclable material (e.g. jute or kraft paper bags).
- Common bag sizes: 10, 25, 50 kg.
- Store the bags in a dry, cool place to prevent quality deterioration.
- Organic gums should remain physically separated from conventional gums.
- If you export essential oils from resins, refer to CBI's Product Factsheet '[Resin oils for cosmetics in Europe](#)' for specific information on packaging of essential oils derived from gum-resins. Essential oils for cosmetics are regarded as chemicals and are subject to more strict packaging requirements.

## **WHAT IS THE DEMAND FOR GUMS AND RESINS IN GERMANY?**

### **IMPORTS**

- As Germany does not produce any gums or resins, it is completely dependent on imports to satisfy demand.
- Between 2010 and 2014, the value of German gum and resins imports increased by 6.6 % annually on average to 55 million euros (see Figure 1). Higher prices in 2014 compared to 2010 explain for the entire increase, as import volumes were the same in both years (13 thousand tonnes).

**FIGURE 1: SUPPLIERS OF GUMS AND RESINS\* BY GERMANY AND MAIN ORIGINS, IN MILLION EUROS, 2010-2014**



\*Natural lac, gums, resins, oleoresins and LBG (excluding guar and other seed gums and xanthan gum), Source: Eurostat, 2015

#### SUPPLIERS OF GUMS AND RESINS

- Overharvesting of gums and resins is a particularly important cause of low availability of wild-collected gums and resins (e.g. gum arabic, myrrh and frankincense) and increasing prices. The sale of stocks from previous years allows the suppliers to maintain supply volumes to Germany. Refer to the section on prices for more information.
- Sudan is Germany's largest supplier of gums. Sudan is the main origin of gum arabic and particularly gum arabic from *A. senegal*. Nexira, a French importer dominates the gum arabic trade in Sudan and also accounts for much of the gum supplies to Germany from France. The company processes the gum arabic before re-exporting it, which explains why average prices of French gum supplies are almost twice as high as those of Sudanese gum supplies.
- The large roles of Italy and Spain in German imports are primarily related to their LBG production. Morocco is also a major producer of LBG, and Tunisia is a smaller one, but these countries do not supply any significant volumes to Germany directly. Spanish and Italian companies purchase much of the locust beans and LBG supplies from Morocco and Tunisia, process it and re-export it to Germany.
- Nigeria and Chad are other major developing country suppliers of gums to Germany with supply values of 1.3 million euros and 0.9 million euros respectively in 2014. Their supplies mainly consist of gum arabic. In the period 2010-2014, the role of Chad in German imports has grown considerably as its supplies increased by 37 % on average annually in terms of value.
- Ethiopia and Somalia are major suppliers of myrrh, frankincense and to a lesser extent of gum arabic. In 2014, their supplies to Germany amounted to 0.7 million euros and 0.4 million euros respectively.
- In Ethiopia, the Natural Gums Processing and Marketing Enterprise (NGPME) is the main exporter of frankincense. According to its brochure, NGPME exports around 1,000-1,500 tonnes annually and accounts for around 40 % of the country's total exports. In 2014, total Ethiopian exports of gums and resins (excluding gum arabic) amounted to 2,612 tonnes. Germany accounted for 139 tonnes. In this same year, Ethiopian exports of gum arabic only amounted to 359 tonnes and none of these exports were destined for Germany.

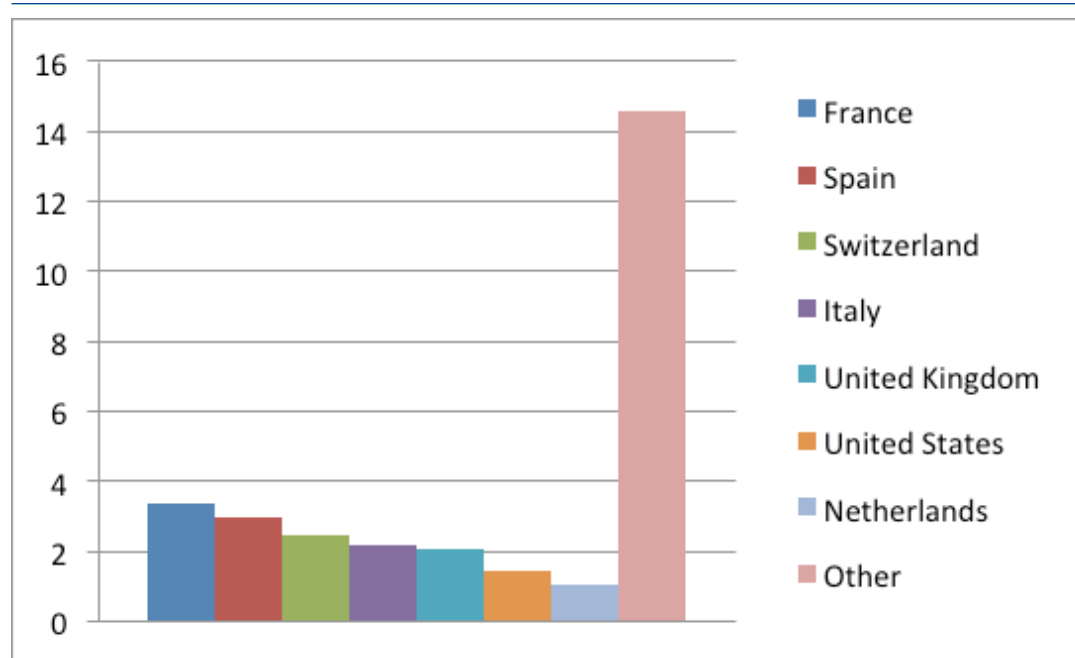


**TIPS:**

- To ensure availability of supply in the future, promote protection of gum and resin trees through development of sustainable natural resource management systems. For example, governments can increase the period of concession rights to encourage concession holders to protect trees and plant new ones.
- Prevent over-harvesting and improper wounding of gum and resin trees by applying [Good Practices for Gums](#). Proper tapping can have a positive effect on long-term productivity of the tree. Prevention of over-harvesting is particularly relevant for collection of frankincense from *Boswellia ogadensis* (Vollesen) species in Ethiopia, as [CITES](#) has put this species on the IUCN Red List and classified it as 'vulnerable D2'.

**EXPORT**

**FIGURE 2: EXPORT DESTINATIONS OF GUMS AND RESINS\* FROM GERMANY, IN MILLION EUROS, 2010-2014**



\*Natural lac, gums, resins, oleoresins and LBG (excluding guar and other seed gums and xanthan gum), Source: Eurostat, 2015

- Germany is an important and interesting market for gums and resins, particularly frankincense and myrrh. The country plays an important role in processing and distributing gums and resins to other European countries. Between 2010 and 2014, the value of Germany's exports of gums and resins increased by 3.2 % annually on average to 30 million euros.

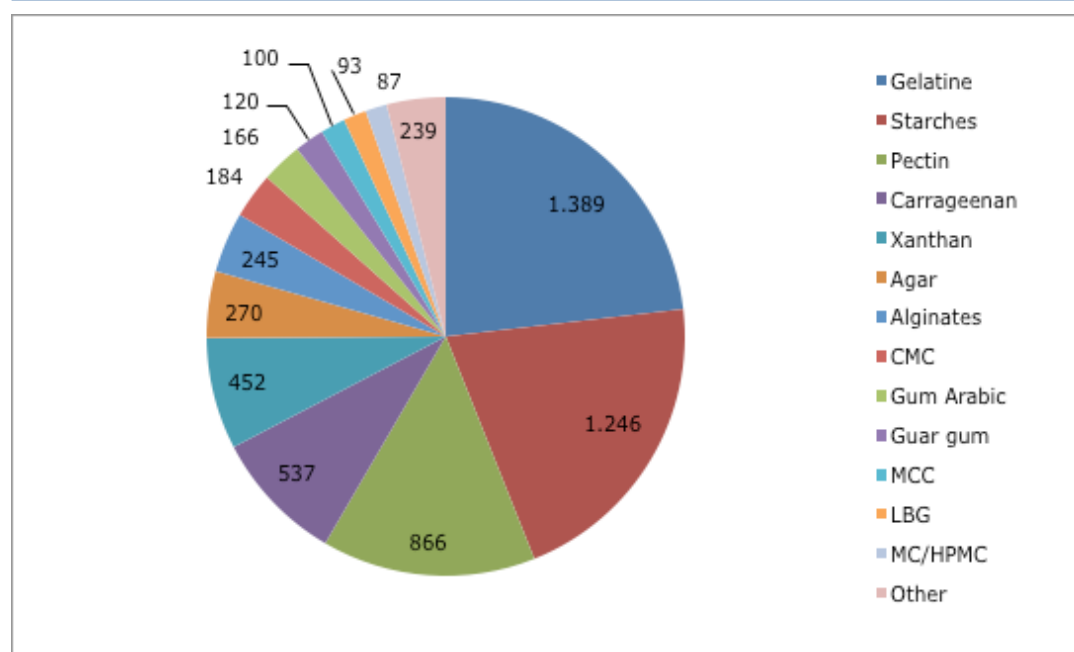
**INDUSTRIAL DEMAND FOR GUMS AND RESINS**

- Gums and resins have various applications in a range of industries from food to oil drilling. Food applications account for an estimated third of the global market for hydrocolloids, which consists for a large part of gums markets.

### INDUSTRIAL DEMAND FOR GUMS AND RESINS FROM THE FOOD INDUSTRY

- Germany offers opportunities for gums and resins for their use in the food industry, which depends entirely on imports for gums supplies. Demand from the German food industry is estimated to be one of the largest in Europe, as Germany has the largest food industry in Europe. The German food industry accounts for 14 % of turnover of the entire European food industry of 1,244 billion euros (Food Drink Europe, 2015). Moreover, the strong presence of manufacturers of texturizing systems, flavourings and their sales offices in Germany indicates that demand for gums and resins is big. In the food industry, gum Arabic and LBG are commonly used in texturizing systems, while essential oils of gum myrrh and frankincense have some use in flavourings.

FIGURE 3: COMPOSITION OF GLOBAL FOOD HYDROCOLLOID MARKET\*, IN MILLION EUROS, 2014



\*Excluding Chinese market, Source: The World of Food Ingredients, June 2015 issue

### INDUSTRIAL DEMAND FOR GUMS AND RESINS FROM THE COSMETICS INDUSTRY

- In the German cosmetics industry, fragrant resins, such as myrrh and frankincense, have the most potential. Refer to the section on segments for more information on applications.
- Within the German cosmetics market, most opportunities for resins can be found in natural cosmetics, as opposed to cosmetics that mainly contain synthetic ingredients. In 2014, the German market for natural cosmetics grew by 10 % to 1 billion euros. Germany is the leading European market for natural cosmetics. Germany accounts for 8 % of the global market and its value is twice as high as that of the other European markets.

### INDUSTRIAL DEMAND FROM THE HEALTH PRODUCTS INDUSTRY

- In terms of health products, most potential for gums and resins can be found in the food supplement and aromatherapy industries in Germany.
- In 2013, the German market for food supplements was the second largest market in Europe with a value of 935 euros million (Source: [Nutraingredients](#), 2014). Food supplements sales in Europe are growing rapidly and registered an increase of 6.2% in the same year.
- Germany is also one of the main European markets for aromatherapy products, especially for medicinal aromatherapy products, but also cosmetic aromatherapy products without medicinal claims. The German market for medicinal aromatherapy is developing strongly, as health insurance companies are increasingly paying for alternative therapies. Compared to most West European countries, alternative therapies in Germany (such as aromatherapy) have a stronger focus on curing illness, as opposed to preventive health.
- Read more about the applications of gums and resins in health products in the section on market segments.

#### TIP:

- Be careful with the claims you make on your product. Consider not making claims at all and sell your gums or resins as natural ingredients based on proven product identity. If you want to make claims for your gums, resins or their derivatives, ensure you can back up these claims to any potential buyer. For more information on requirements for claims, refer to the section on legal requirements in this factsheet.

Apart from demand for gums and resins from above mentioned industries, gums and resins are also in demand for other markets. Although these markets are not covered in this CBI Product Factsheet, they may offer additional opportunities for your products. Particularly the incense market is an important market for frankincense. Gum arabic and LBG also have many uses in technical applications. For example, LBG is also widely used in the paper and textile industries.

### WHAT TRENDS OFFER OPPORTUNITIES ON THE GERMAN MARKET FOR GUMS AND RESINS?

#### *Natural ingredients*

The German market for food, cosmetics, but also many other end-products, is increasingly propelled by the 'natural' trend, as awareness of environmental and social issues becomes more central to consumer choice. As this is a growing trend, producers are increasingly looking for new natural ingredients to include in their products. The 10% growth in certified natural cosmetics in Germany in 2014 is illustrative in that respect.

In the food industry, clean labelling as a response to the natural trend is particularly relevant for gums to be used as thickeners (e.g. gum arabic and LBG). Clean labelling refers to the use of ingredient names on consumer product labels which are perceived to be natural and healthy. The clean labelling trend stimulates the use of natural gums over synthetic thickeners with less appealing names.

### **Ethical products**

A growing interest in ethically sourced products provides an opportunity for fair trade and environment-friendly produced gums and resins. German buyers are particularly concerned about the lack of transparency in sourcing of wild-collected gums and resins, such as gum arabic, myrrh and frankincense. The lack of transparency makes it difficult if not impossible to guarantee ethical sourcing.

In addition, consumers are interested in the story behind the products. German manufacturers respond to this need by actively communicating about the ingredients in their products with the most compelling stories about product, production, origin, local benefits and traditions. They often stimulate suppliers to improve sustainability of their business by taking appropriate measures. Suppliers do not necessarily need to be certified accordingly. However, buyers appreciate certificates as proof.

### **Dietary fibre**

Various gums including gum arabic have potential as a dietary fibre. Dietary fibres have the interest of European consumers which increasingly look for healthy products. However, the [European Food Safety Authority](#) (EFSA) has not (yet) approved any health claims related to gum arabic nor dietary fibres. At this moment, food manufacturers can only make nutrition claims for products with high fibre content.

- Source of Fibre: A claim that a food is a source of fibre, and any claim likely to have the same meaning for the consumer, may only be made where the product contains at least 3 g of fibre per 100 g or at least 1,5 g of fibre per 100 kcal.
- High in Fibre: A claim that a food is high in fibre, and any claim likely to have the same meaning for the consumer, may only be made where the product contains at least 6 g of fibre per 100 g or at least 3 g of fibre per 100 kcal.

Although gums like gum arabic are generally used in concentrations below 1% for thickening, they may be used in higher concentrations in functional foods. Growing demand for such functional foods may cause a significant increase in demand for the respective gums.

#### **TIPS:**

- Check your opportunities for supporting German buyers with their ethical sourcing. Consider certification when buyers need proof of your business' sustainability.
- In addition to certification, focus on the story behind your gum or resin in your promotional material. Helping German producers communicate stories which set them apart in the market will also help to position your own company better in the market.
- Be careful with health claims in your promotion, but keep track of possibilities to make health or nutrition claims related to dietary fibre and polysaccharides.

Please refer to [CBI Trends for natural thickeners](#), [CBI Product Factsheet: Resins in Europe](#) and the [CBI Product Factsheet: Aromatherapy in Europe](#) for more market trends.

## WHAT LEGAL REQUIREMENTS MUST MY PRODUCT COMPLY WITH?

Applicability of legislative requirements for export of gums and resins depends on their destination. In general, requirements are most strict when the gum or resin is destined for use in health products. Requirements are less strict when the gum or resin is destined for use in food or cosmetics.

**TABLE 3: LEGISLATIVE REQUIREMENTS FOR GUMS AND RESINS IN GERMANY**

Subject	Explanation	Reference
<b>Applicable for food (including food supplements):</b>		
Food safety	Food processors, including exporters processing gums, must have a food safety management system in place based on HACCP principles. This does not have to be certified.  In the gums and resins trade, hygiene is a particular point of attention in facilities where cleaning, sorting and grading takes place.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
Permitted flavourings	Only permitted flavouring substances are allowed to be used in or on foods. All chemical constituents of a gum must be on the European Union list of flavouring substances.  Checking if the gums or resins are allowed to be used in foods is a task of flavouring and food manufacturers in Europe.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
<b>Applicable for cosmetics:</b>		
EU Cosmetics Regulation	Restrictions on use of substances in cosmetics and requirements for so-called 'Cosmetic Product Safety Reports' and 'Product Information Files'.  You cannot make medical claims on cosmetic ingredients. A <a href="#">list</a> of cosmetic functions is available (reference only).	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>
<b>Applicable for health products (aromatherapy and food supplements):</b>		
Herbal medicinal products	Herbal medicinal products such as essential oils from resins for medicinal aromatherapy are subject to a more specific simplified regime compared to the legislation on conventional medicinal products.	<a href="#">CBI Product Factsheet: Aromatherapy in Europe</a>
REACH	Legislation on Registration Evaluation and Authorisation of Chemicals (REACH) requires suppliers of chemicals including essential oils from resins for aromatherapy to apply strict rules on classification, labelling and packaging of chemicals. For example, it requires the use of symbols and risk phrases on the label of your product.	<a href="#">CBI Product Factsheet: Aromatherapy in Europe</a>
Permitted botanicals for food supplements	Gums and resins are only permitted for use in food supplements in Germany when they are on the <a href="#">positive list</a> of the Federal Office of Consumer Protection and Food Safety (BVL). Of the gums and resins under review only frankincense from <i>Boswellia serrata</i> is listed.	<a href="#">CBI Buyer requirements for food supplements</a>

Also refer to the [EU Export Helpdesk](#) for more information on legislative requirements.

## WHAT ADDITIONAL REQUIREMENTS DO BUYERS OFTEN HAVE?

The requirements listed below are common in Germany. Most of your competitors already comply with these requirements.

**TABLE 4: COMMON REQUIREMENTS FOR GUMS AND RESINS IN GERMANY**

Subject	Explanation	Reference
<b>Applicable for all markets:</b>		
Sustainability	German buyers prefer suppliers that can demonstrate good standards in sustainability. These can also be certified, for example with <a href="#">FairWild</a> , according to <a href="#">BioTrade Principles and Criteria</a> , or showing documentation of sustainable sourcing. This involves social and environmental responsibility as well as sustainable sourcing practices.	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>
Documentation	Ensure the buyer can access the following documentation: <ul style="list-style-type: none"> <li>■ Technical Data Sheet (TDS) or Specification</li> <li>■ Certificates of analysis to support the claims of the specification</li> <li>■ GMO, Halal and Kosher certificate (if requested)</li> <li>■ Certificate of origin</li> </ul>	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a> <a href="#">CBI's Workbook 'Preparation of a Technical Data Sheet for food additives'</a>
Representative samples	Your sampling method should result in lot samples that represent what you can deliver in terms of quantities, quality and lead time as specified by the buyer and in your Technical Data Sheet.	<a href="#">ISO 212:2007 for sampling of essential oils</a> and <a href="#">ISO 356:1996 for preparation of essential oil test samples</a>
Delivery terms	Pay attention to strict compliance with <a href="#">delivery terms</a> as agreed upon with your buyer.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
Website	German buyers look for credible suppliers. You can improve the perceived credibility of your company by developing your website accordingly.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
<b>Applicable for food:</b>		
Certification of food safety	Many German food manufacturers require their suppliers to implement a HACCP-based food safety management system such as ISO 22000.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
<b>Applicable for cosmetics:</b>		
Good Manufacturing Practices (GMP)	The European Federation for Cosmetic Ingredients has developed a standard for GMP.	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>
International Fragrance Association (IFRA) Standards	IFRA Standards form the basis for the globally accepted and recognised risk management system for the safe use of fragrance ingredients.	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>
Documentation	Ensure the buyer can access the following documentation: <ul style="list-style-type: none"> <li>■ Technical Data Sheet including CAS number and information on allergens (in accordance with IFRA standards)</li> </ul> Material Safety Data Sheet ( <a href="#">Example of an MSDS in compliance with international standards</a> )	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>

## WHAT ARE THE REQUIREMENTS FOR NICHE MARKETS?

The requirements listed below are only relevant for specific market segments. Compliance with these requirements is only recommended for exporters targeting the corresponding niches.

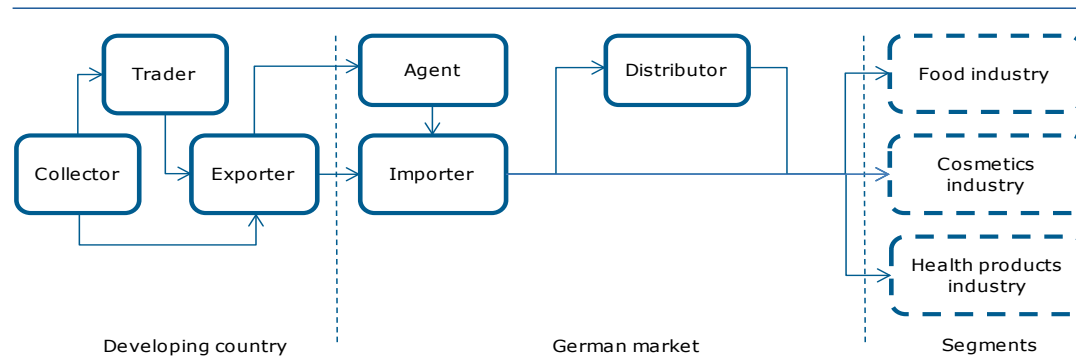
**TABLE 5: NICHE REQUIREMENTS FOR GUMS AND RESINS IN GERMANY**

Subject	Explanation	Reference
<b>Applicable for all markets:</b>		
Certification of sustainability	Certification of organic and/or fair production is increasingly appreciated by German buyers.	<a href="#">EU Buyer Requirements for natural colours, flavours and thickeners</a>
<b>Applicable for cosmetics:</b>		
Natural cosmetics	'Natural cosmetics' are often referred to as cosmetics containing a certain minimum amount of natural ingredients. The introduction of standards defining natural cosmetics market has driven the development of private sector standards. The introduction of standards like <a href="#">NaTrue</a> and <a href="#">Cosmos</a> .	<a href="#">EU Buyer Requirements for Natural Ingredients for Cosmetics</a>

## WHAT DO THE TRADE CHANNELS AND INTERESTING MARKET SEGMENTS LOOK LIKE IN GERMANY FOR GUMS AND RESINS?

### MARKET CHANNELS

**FIGURE 4:**



Source: ProFound

A lot of gums and resins are only cleaned and graded before export to Germany. Most value addition by processing takes place in Germany by a small group of importers. These processors have complex industrial production systems for processing gums and resins, including for example: dissolving, mixing, multiple filtering, pasteurization and atomization for gum arabic.

The importers receive requests from very diverse buyers, such as manufacturers of texturizing systems for food, manufacturers of aromatherapy products and manufacturers of flavourings and fragrances. These manufacturers usually prefer to source from importers instead of sourcing from suppliers in the countries of origin. They particularly value the year-round supplies, short delivery times and low minimum orders. In addition, manufacturers are often not interested in importing at all, as they do not have the required knowledge to import directly from the source.



**TIP:**

- Benefit from the experience and knowledge of specialised German importers and agents instead of approaching manufacturers directly. Especially for exporting specialised products, traders are the most suitable distribution channels.

**MARKET SEGMENTS**

As explained under the sections on industrial demand, gums and resins can be used in different market segments: food, cosmetics and health products. The lists below give an indication of potential applications in these market segments for the gums and resins covered in this study. These lists are not exhaustive, but cover the most interesting product uses.

**Food**

- German buyers in the food industry primarily consider LBG and gum arabic as hydrocolloids. The main use of gum arabic is stabilising and emulsifying of beverages, but also dairy products. For this application, German buyers prefer the Senegal grade.
- LBG also has applications in non-alcoholic beverages and dairy products (e.g. cheeses, puddings) in addition to bakery products (e.g. baking mixes, fillings), sauces and condiments, and jams and jellies. LBG is applied for both thickening and stabilising purposes.
- Coating of confectionary is another application of gum arabic. For this application, buyers often prefer the cheaper Seyal grade.
- Although the use of gums as soluble dietary fibre is still small, this market segment has the potential to grow rapidly in the next years. Especially if the European Food Safety Authority (EFSA) will approve health claims related to soluble dietary fibre. As concentrations of gums in applications which require gums as soluble dietary fibre (e.g. gum arabic) will have to be much higher than in applications which require gums for stabilising or thickening, users will prefer the cheaper grades such as gum arabic Seyal.

**TIP:**

- Check books on food additives uses, such as the Food Additives Data Book to find out more about applications of your gum or resin in food products.

**Cosmetics**

- German buyers in the cosmetics industry mostly purchase the fragrant resins (myrrh and frankincense) for distillation of the essential oil and subsequent use of the oil in fragrances for cosmetics (i.e. perfumes) and cleaning products.
- Oil of myrrh is considered a valuable ingredient in perfumes for its balsamic and heavy odour. Myrrh's warm, balsamic note is frequently used as a base note in oriental scents. Its distinctive aroma can evoke benzoin and frankincense, as well as moss. Serge Lutens built a fragrance around it in his Salons du Palais Royal Shiseido collection (Source: [Osmoz](#)).
- Although the perfumes segment of the cosmetics industry is estimated to be a major segment for derivatives of fragrant resins, the use of these resin derivatives (e.g. essential oils) in perfumes shows less growth than other uses. There is more product development for other segments of the cosmetics industry.
- The market segment for anti-ageing products and particularly skin care products with anti-ageing properties is one of the most promising growth market segments for frankincense and myrrh. According to [CosIng](#), the cosmetic functions of frankincense and myrrh oil are masking and skin conditioning.
- Another major category of applications of myrrh is toiletries such as toothpaste and oral preparations such as mouthwashes.
- German buyers of fragrant resins are most interested in the higher grades, such as 1A and 1B grade frankincense. Users of these resins for traditional Chinese medicine, particularly in China, usually prefer the cheaper lower grades, such as grade 4 special frankincense.

#### TIPS:

- Consider to distil essential oils from myrrh or frankincense, as the cosmetics market often uses essential oils as ingredients instead of the unprocessed resins. Note that distillation requires investment in technology (including equipment and human resources) and that competition from European distillers is very strong.
- Find out about the efficacy of myrrh and frankincense as ingredients for anti-ageing products. Work with recognised laboratories that can provide these efficacy data. If you do not have the resources to do so, collaborate with your German buyer.

#### Health products

- Only ingredients with a monograph from the European Pharmacopoeia are allowed for use in medicinal products. The European pharmacopoeia lists monographs for:
  - Gum arabic (# 307: Acaciae gummi; # 308: Acaciae gummi, spray-dried)
  - Myrrh (# 1349: Myrrha; # 1877: Myrrh tinctura)
  - Frankincense (# 2310: Olibanum indicum).
- Although gum arabic is allowed for use in medicinal products, as it is listed in the European pharmacopoeia, this gum is not commonly used for its health properties in the German market.
- Myrrh and frankincense are also listed in the European pharmacopoeia and are allowed for use in this market. Myrrh is registered as both a resin and a tincture. The [EMA monograph for myrrh tincture](#) registers two traditional uses for myrrh tincture, an ethanol extract of myrrh. These registered uses are (1) to treat minor ulcers and inflammation in the mouth and (2) to treat minor wounds and small boils.
- The best opportunities for frankincense are in the market for food supplements. These are for internal use. Frankincense has been used traditionally for its anti-inflammatory properties, most specifically in joint health. Various studies have been conducted on the efficacy of boswellic acids.
- The essential oils of frankincense and myrrh are also used in aromatherapy. Frankincense oil is used for its calming and mood uplifting effects. [Myrrh](#) is used in various applications, e.g. oral care, skin care and treatment of joint pains.

#### TIPS:

- If you want to target the health market in Europe, you need to comply with relevant legislation. Refer to [CBI Buyer Requirements for natural ingredients for health products](#) for details on this legislation.
- Learn more about the market for frankincense as an ingredient for joint health products by reading the [CBI Product Factsheet on Natural Ingredients for Joint Health](#).
- Learn more about the aromatherapy market for essential oils of frankincense and myrrh in the [CBI Product Factsheet on Aromatherapy](#).
- Learn more about potential health applications from scientific research on myrrh as listed on the website of [Cropwatch](#).

## WHAT ARE THE END MARKET PRICES FOR GUMS AND RESINS?

### PRICE DEVELOPMENTS

Although prices of gums and resins on the German market largely follow global market prices, German buyers are relatively price sensitive and demand low prices compared to many buyers in other countries. This makes them price competitive and contributes to their strong position in the market. This implies that the German market is particularly interesting for large-scale exporters with low prices which can benefit from economies of scale.

Sudan dictates global prices for gum Arabic, buyers will expect these same prices, or lower, from you. In the past decade, prices for gum arabic fluctuated strongly due to political unrest in Sudan. The lowest prices for cleaned and spray dried gum arabic Senegalese amounted to 2,300 euros/tonne. The highest prices amounted to 7,200 euros/tonne. In 2015, prices of Sudanese gum arabic (FOB Kordofan, Sudan) were on a notably higher level than in 2014 and averaged around 2,800 euros/tonne.

Global prices of frankincense and myrrh usually average around 2-3 euros/kg. However, you can add value to these raw materials if you can distillate them to obtain the essential oils. To illustrate, frankincense oil prices can be as high as 200-250 euros/kg, and myrrh oil can reach 300 euros/kg. Essential oils of resins fetch such high prices, because yields of distillation usually reach only 3-10 % for frankincense and 3-5 % for myrrh.

It is important to realise that price elasticity in the LBG market is limited by strong competition from substitutes, such as guar gum and Tara gum. Although demand for LBG is currently quite strong, prices have remained stable, as guar gum and tara gum prices are relatively low. In 2015, the regular price level for LBG is 7-8 euros per kg but it can range between 5 euros and 9 euros. Organic LBG, however, is still scarce and prices have increased. It is estimated that organic LBG receives a price premium of about 10 %.

The price volatility for gums and resins in Germany has increased. This is the result of a growing speculation in the market. German importers used to keep inventory of gums and resins for a year. However, due to increases in working capital costs, this tactic is less common.

### TIPS:

- Ensure that your prices reflect the quality of your product. Different grades of gums and resins fetch different prices. For example, if you supply gum arabic of the seyal variety, you cannot compare your price with that of gum arabic of the Senegalese variety.
- Monitor harvests in major production countries to anticipate price developments for your specific gum or resin. For example, monitor gum arabic harvests in Sudan to anticipate developments of gum arabic prices in global trade. You may request such information from importers. The German importer C.E. Roeper also provides regular market reports on their [website](#).
- Improve prices of your gums or resins by cleaning and grading.
- Further increase export value of gums and resins by adding processing such as spray-drying, distillation or extraction to your operations. These types of processing are only feasible for companies that already apply strict sorting, grading and cleaning standards. Otherwise, European buyers will not accept the product, because they require very high quality consistency. Refer to CBI Market Intelligence [‘The European market for essential oils for cosmetics’](#) and the [‘CBI Product Factsheet ‘Resin oils for cosmetics in Europe’](#) for more information on the markets for the value-added products.
- Refer to the list of suppliers of distillation equipment by the [International Trade Center](#) if you need such equipment to distil your gum-resins.

## WHAT COMPETITION DO I FACE ON THE GERMAN MARKET FOR GUMS AND RESINS?

Barriers to entry in the German gum and resin market are relatively low. As German companies usually perform much of the processing such as spray-drying or extraction, technology requirements in the country of origin are low. Manual collection, sorting, grading and cleaning are possible and require very little technology. These activities also require little capital and basic skills.

Nonetheless, the need for concession rights to collect gums or resins in the country of origin or the long maturation period for cultivated trees can pose a market entry barrier. Moreover, the harsh environment of the production sites for wild-collected gums and resins discourages many collectors.

### TIP:

- Organise collectors into cooperatives or producer groups to improve their capacity to produce bigger volumes and higher qualities. Larger groups allow for efficient value-addition activities such as sorting, grading, cleaning and also increase their supplier power.

Barriers to market entry for value-added products, such as texturizing systems or essential oils from resins for fragrances or aromatherapy are much higher. The value addition requires more technology, skilled personnel to work with the technology, highly educated technical staff for quality management and providing technical advice to buyers.

### TIP:

- Only consider value addition through additional processing when you already have access to the market for unprocessed gums or resins. Additionally, you will have to investigate if you have the financial and human resources to invest in the new technology. If you have the resources, start with a small-scale pilot to develop the product and research its qualities.

The risk of substitution is relatively low for gums and resins. The unique properties of gums and resins make them difficult to replace by other products. Although German companies can synthesize many of the individual substances in gums and resins, the complex composition of many different substances is often still difficult to reproduce. Moreover, German manufacturers are generally in favour of using natural ingredients instead of synthetic ingredients.

Although all gums and resins have unique properties, the functional properties of LBG are very similar to those of guar gum and tara gum. In practice, food manufacturers frequently use these gums interchangeably depending on current price levels of each of these gums.

Refer to [CBI Competition for natural thickeners](#), [CBI Product Factsheet: Essential oils for fragrances in Europe](#), for more information on competition in the respective markets.

## USEFUL SOURCES

### SOME IMPORTERS

- C.E. Roeper GmbH, [www.roeper.de](http://www.roeper.de)
- Willy Benecke GmbH, [www.willy-benecke.com](http://www.willy-benecke.com)
- W. Behrens GmbH & Co. KG, [www.wbehrens.com](http://www.wbehrens.com)

### TRADE FAIRS

Visiting and especially participating in trade fairs is highly recommended as one of the most efficient methods for testing market receptivity, obtaining market information and finding prospective business partners. The most relevant trade fairs in Germany for exporters of gums and resins are:

- BioFach, Nuremberg, Germany – [www.biofach.de/en](http://www.biofach.de/en)
- Anuga, Cologne, Germany – [www.anuga.com](http://www.anuga.com)
- Other trade fairs for natural ingredients for food, cosmetics and/or health products, which are also visited by German buyers include:
  - Food Ingredients Europe – [www.figlobal.com/fieurope/](http://www.figlobal.com/fieurope/)
  - Vitafoods, Geneva, Switzerland – [www.vitafoods.eu.com](http://www.vitafoods.eu.com)
  - SANA in Bologna, Italy – [www.sana.it](http://www.sana.it)
  - In-Cosmetics – [www.in-cosmetics.com](http://www.in-cosmetics.com)
  - Beyond Beauty Paris, France – [www.beyondbeautyparis.com](http://www.beyondbeautyparis.com)

### MORE INFORMATION

- CBI market information – Promising EU export markets.
- EU Expanding Exports Helpdesk – <http://exporthelp.europa.eu> – go to 'trade statistics'.
- Eurostat – <http://epp.eurostat.ec.europa.eu/newxtweb> – statistical database of the EU. Several queries are possible. For trade, choose 'EU27 Trade Since 1995 By CN8'.
- International Trade Statistics – [www.trademap.org](http://www.trademap.org) – you have to register.

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This survey was compiled for CBI by ProFound – Advisers In Development in collaboration with CBI sector expert Klaus Duerbeck, December 2015.