CBI
Ministry of Foreign Affairs

CBI Workbook for preparation of Technical Data Sheets:

Natural food additives in Europe

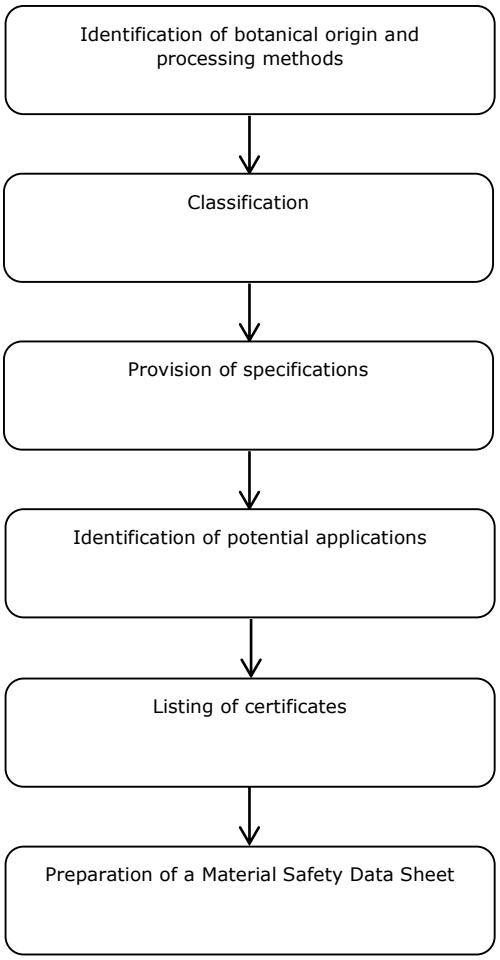
Introduction

A well-elaborated Technical Data Sheet (TDS) can facilitate the sourcing process for buyers enormously by making it easier for them to determine whether a product's quality is suitable for them or not. Use this workbook to prepare a TDS and improve your access to the European market by lowering the barrier for buyers to determine that you are an interesting supplier.

Introduction

A Technical Data Sheet (TDS) is a concise document with technical data on your product. The exchange of such technical data is an important step in the process leading to trade. European buyers usually require detailed technical data and a sample for analysis to determine the product's quality and assure that it complies with their requirements. In a later stage of the negotiations, buyers also require company documentation (e.g. certificates for quality management). CBI Buyer requirements for natural colours, flavours and thickeners and respective CBI Product Factsheets provide detailed information on these requirements. Refer to the CBI Market Intelligence on Natural colours, flavours and thickeners, as well as for other food additives, for additional information on the European market for these products.

Development of a Technical Data Sheet for natural food additives consists of 6 steps:



This workbook takes you through the 6 steps using questions. By answering the questions you develop all the necessary information to draw up a Technical Data Sheet. An exemplary TDS is provided in the Annex.

Step 1: Identification of botanical origin and processing methods

A Technical Data Sheet always starts with an identification of the botanical origin of the product. Identification of the correct botanical origin according to the international nomenclature is very important to prevent misunderstandings between supplier and buyer. The International Code of Nomenclature for algae, fungi, and plants (ICN) is a system of scientific names for plants. Its use provides an unambiguous way to identify a product.

The botanical origin is generally the main indicator for the properties of the product. For example, the concentration of capsaicinoids, the major pungent compounds of paprika oleoresin, is notably higher in cultivars of the *capsicum chinense* habanero type than in many sweet pepper cultivars of *capsicum annuum*. However, there are also *capsicum annuum* cultivars with a very high pungency. As buyers of paprika oleoresin commonly use it as a colouring, they prefer paprika oleoresin with minimal capsaicinoids content (i.e. minimal pungency). If a supplier is capable of reducing capsaicinoids content through additional processing, that must be clearly explained in the TDS.

Subject	Please fill in
1 Establish the botanical origin of your product and include a picture of the plant • What is the family of plants? • What is the genus? • What is the species? • What is the cultivar? • What are the local and common synonyms? Ask a local expert in botany to determine the botany	For example: • Family: Solanaceae • Genus: Capsicum • Species: annuum L. • Variety: annuum Synonyms: chillies (English), paprika (English), Lalmirca (Hindi)
2 Indicate availability of your product • When is the harvesting season?	For example: August-September
3 Describe the processing of raw materials Has the raw material been sorted and/or graded? (specify if relevant) What processing method has been used to obtain the product (e.g. extract)? What solvent has been used for extraction? What additional processing methods have been used to further enhance the product?	For example: Solvent extraction with hexane, after sorting out low-quality raw materials, and standardisation of the oleoresin for colour intensity with sunflower oil

Step 2: Classification

Many essential oils, gums, resins, extracts and other natural ingredients have diverse applications in a range of sectors (e.g. food additives and cosmetics). These sectors use different classification systems to identify their products. The sector classifications listed below are relevant in the TDS for food additives. Depending upon the type of food additive, include the following classifications:

All food additives, except for flavourings For example: gums (thickeners), waxes (glazing agents), paprika oleoresin (colouring matter)	The European food industry uses E-numbers to identify food additives. The European numbering scheme follows that of the International Numbering System (INS) of Codex Alimentarius. Every approved food additive in Europe has an E-number.
All food additives	The chemicals industry, including many flavours and fragrance manufacturers, uses the Chemical Abstracts Service (CAS) Registry Numbers which 'provides an unambiguous way to identify a chemical substance or molecular structure when there are many possible systematic, generic, proprietary or trivial names'.

All food additives	European buyers must comply with regulations of the European Union which identifies commercial chemical substances through a registry of numbers assigned to each of these substances: the European Inventory of Existing Commercial Chemical Substances (EINECS).
Flavourings For example: essential oils, oleoresins, absolutes	The flavourings sector also uses the Council of Europe's (CoE) Blue Book, also known as the book of flavourings, which provides safety-in-use evaluations.
Flavourings For example: essential oils, oleoresins, absolutes	In addition to the CoE classification, European buyers also use the classification by the Flavor and Extract Manufacturers Association of the United States (FEMA). These are also known as Generally Recognised As Safe (GRAS) numbers.

Suppliers of natural ingredients which may also have applications in other sectors best provide as many sector classifications in their TDS as available.
In addition to classification for specific sectors, suppliers must also provide classification for customs and handling agents during transport:

All food additives	The Harmonised System (HS) is the international coding system to classify traded products and determine which tariff rate applies.
All food additives	UN numbers identify hazardous substances in the framework of international transport. UN numbers are provided through the Globally Harmonized System of Classification, Labelling of Chemicals (GHS).

In general, suppliers produce one TDS for all potential buyers, including those from other markets and notably the USA. In the latter market, buyers also require Food and Drug Administration (FDA) numbers.

Subject	**Please fill in**

List all classifications relevant for your product, as mentioned above
 	
• What is the E-number?
  ○ Find the E-number of your product in EU Regulation 231/2012
• What is the CAS number?
  ○ Check the monograph for your product of JECFA or check Material Safety Data Sheets of reputable companies for the CAS-number of your product
• What is the EINECS number?
  ○ Search for the EINECS number in the database of the European Chemicals Agency
• What is the CoE name?
  ○ Find out when your product was evaluated by the CoE and check the respective Blue Book for the reference
• What is the FEMA number?
  ○ Find the number at the website of FEMA
• What is the HS code?
  ○ Check the EU Export Helpdesk
• What is the UN number?
  ○ Check for the substances in your product in the UN Recommendations on the Transport of Dangerous Goods or consult the authority in your respective country (e.g. customs)
• Is the product natural according to the definition of EU Regulation 1333/1334?
• Does the product contain allergens?
	For example (paprika oleoresin):
	• E-number: 160c
	• CAS number(s): 84625-29-6 and 68917-78-2
	• EINECS: 283-403-6
	• CoE: 107
	• FEMA: 2834
	• HS: 33019030 (i.e. extracted oleoresins)
	• UN number: 1169 (extracts, aromatic, liquid)
	• Natural flavouring as per EU Regulation 1334, article 3.2.c
	• Free from allergens in Annex II of EU Regulation 1169/2011 and in the ALBA list

○ Check if your product contains any of the substances listed in Annex II of EU Regulation 1169/2011 ○ Download the ALBA list for other potential allergens and check if your product contains any of these substances	

Step 3: Provision of specifications

Specifications (physical properties and chemical composition) form the core data of a TDS. Many European buyers give most attention to this part of the TDS. They usually have strict specifications themselves and need to verify compliance of the supplier's product by checking the specifications in the TDS. The buyer's specifications depend largely on the application of the product by the buyer. Some buyers require a high concentration of 'substance A', while other buyers require a high concentration of 'substance B'. In many cases, you can identify the specifications that buyers require by profiling them. For example, buyers of food colourings will require low concentrations of capsaicinoids (i.e. low pungency), while buyers of flavourings for spicy foods will accept higher concentrations of these substances (i.e. high pungency).

The claimed specifications in your TDS must be substantiated with a certificate of analysis from an accredited laboratory. The certificate of analysis serves as proof that you are capable of producing a product with the specifications as provided in your TDS. Every sample sent to a buyer must be accompanied by a certificate of analysis to prevent any differentiation in specifications. The analysis of the sample must be done after production, when the product is ready to be exported.

Buyers usually analyse pre-shipment and after-shipment samples to determine compliance with the specifications as per the agreement.

Subject	Please fill in
1 Provide a physical analysis Contract an accredited laboratory to provide a certificate of analysis containing answers to the following questions. Questions for all food additives: • What is the colour? • What is the aroma? • What is the microbiological activity in your product? Questions for essential oils and oleoresins: • What is the density? • What is the optical rotation? • What is the refractive index? • What is the solubility in water and oil?	Example (paprika oleoresin): • Hue: dark red • Colour: 100,000 Colour Units • Not possible to measure optical rotation and refractive index • Aroma: Paprika and woody • Density (25^0C): 0.900 gr/L • Solubility: insoluble in water, soluble in oil
2 Provide a chemical analysis Contract an accredited laboratory for gas chromatography to provide a certificate of analysis containing answers to the following questions. Questions for essential oils and extracts: • What are the major constituents of your product and their shares in total weight? • Which minor constituents are also of relevance to buyers (e.g. limonene in orange oil) and what is their share in total weight? • What is the solvent residue in your product? Questions for hydrocolloids: • What is the purity of your product? • What is the viscosifying strength?	For example (paprika oleoresin): • Carotenoid content (incl. capsanthin, zeaxanthin, capsorubin): 1.3 g /100 g • Solvent (hexane) residue: <25 ppm (compliant with EU Directive 2009/32)

3 State compliance with international standards Does your product meet the relevant EU standard? • If your product has an E-number, state compliance with standards in EU Regulation 231/2012 including purity and microbiological criteria • If your product does not have an E-number (e.g. essential oils), state compliance with standards in EU Directive 2009/32 • Does your product's quality meet the relevant ISO product standard? ○ Find the ISO standard for your product on the ISO website (not available for all products).	For example, paprika oleoresin: • Compliant with standard for E160c, as defined in EU Regulation 231/2012
4 Indicate storage conditions • What are the storage conditions? • What is the product's shelf life?	For example, paprika oleoresin: • Store in a dry cool place • Shelf life: 36 months

Step 4: Identification of potential applications

Food and beverage manufacturers regard food additives as raw materials rather than as end-products. They use a range of ingredients to manufacture their products and need the functionality of the food additives to further enhance their products. Food and beverage formulation is a complex task as the ingredients may react with others to influence their performance. For example, many hydrocolloids do not form a strong gel in an acidic environment.

Giving technical advice on performance of food additives in complex food or beverage formulation is generally the task and responsibility of intermediaries such as texturising systems suppliers. Their advice is particularly useful for food or beverage formulations consisting of many different ingredients and food additives that might react with each other, or for food or beverages requiring further processing (e.g. heating). In some cases, food or beverage manufacturers can do without such advice, as is the case for simple products with few ingredients or well-known food and beverage formulations. In such cases, suppliers of food additives can provide them with basic information on potential applications of their product. This will help buyers to determine the suitability of the food additive for their intended use.

Subject	Please fill in

Provide a list of typical applications
 	
• What are common applications in Europe for your product?
  Consult books on food additives uses (e.g. the Food Additives Data Book)
  ○ If your product has uses as a flavouring, check Perfumer & Flavorist's Flavor Libary or purchase the Flavour Raw Materials database of Leffingwell or the Book of Flavourings (Blue Book) of the Council of Europe
  ○ If your product can be used as a thickener, purchase the Handbook of Hydrocolloids or Hydrocolloids in Food Processing
	Example (paprika oleoresin):
	• Seasonings
	• Marinades
	• Sauces
	• Soups

Step 5: Listing of certificates

European buyers appreciate information on certification of compliance to international standards. The certification assures buyers of the quality of your product.

Technical Data Sheets list only product certificates and certificates for systems relating to consumer labels (e.g. Fairtrade). Product certificates provide proof that the product meets certain quality standards or that it possesses certain properties. Certificates for processes and systems (e.g. certificates for Quality Management Systems) are part of your company documentation, and they are not included in the TDS.

Subject	Please fill in

List your certificates
 	
• Do you have a Kosher certificate?
• Do you have a Halal certificate?
• Do you have a GMO-free certificate?
• Do you have an organic certificate?
• Do you have a Fairtrade certificate?
  ○ Mention the names of the certifiers
  ○ Include copies of the certificates in your TDS or provide links to downloads
	For example (paprika oleoresin):
	• Kosher certified by OK
	• Non-GMO certified by Intertek

Step 6: Preparation of a Material Safety Data Sheet

Although not an integral part of a Technical Data Sheet, every TDS for food additives must be accompanied by a Material Safety Data Sheet (MSDS). A MSDS provides information on hazards and risks, and instructions for safe handling of the product. The use of MSDS in international trade aims to reduce risks for handling personnel to their health and for the environment. For example, a MSDS for a toxic substance provides instructions for first aid measures in case of accidental release.

Subject	Please fill in
Prepare an MSDS Hire an expert to prepare a MSDS for your product. The MSDS must comply with requirements of EC 1907/2006 (REACH) and follow a 16 section format: • SECTION 1: Identification of the substance/mixture and of the company/undertaking • SECTION 2: Hazards identification • SECTION 3: Composition/information on ingredients • SECTION 4: First aid measures • SECTION 5: Firefighting measures • SECTION 6: Accidental release measures • SECTION 7: Handling and storage • SECTION 8: Exposure controls/personal protection • SECTION 9: Physical and chemical properties • SECTION 10: Stability and reactivity • SECTION 11: Toxicological information • SECTION 12: Ecological information • SECTION 13: Disposal considerations • SECTION 14: Transport information • SECTION 15: Regulatory information • SECTION 16: Other information ECHA provides Guidance in a nutshell for the compilation of Safety Data Sheets	For example, refer to the Lluche company's MSDS for paprika oleoresin.

Annex: Exemplary Technical Data Sheet of the company Meschede for Paprika Oleoresin

Meschede TRADING & CONSULTING GMBH

PRODUCT SPECIFICATION

Product: Paprika Oleoresin 100.000 CU

Article number: 3016011

1. Identification

CAS Number(s): 84625-29-6 68917-78-2
EINECS: 283-403-6 CoE: 107
FEMA: 2834 FDA:
Customs tariff no.: 33019030

2. Manufacturing

Botanical Origin: Capsicum annum L.
Geographic Origin: India
Manufacturing process: Solvent extraction of the dried pods

3. Technical Properties

Appearance: viscous liquid
Colour: red
Solvent: Methanol / Hexane / Acetone
Solvent residue: max. 25 ppm

4. Storage / Shelf Life

Store in a cool and dry place, protect from direct sun and heat.
Shelf life min. 36 months in originally sealed containers.

5. Classification and Labelling:

Flavouring preparation obtained from food, as per flavouring directive 1334/2008, Art. 3, No. 2d) i)

Labelling as per flavour directive 1334/2008, article 15-16:
Natural Paprika Extract

FTNF/ WONF:
The product is exclusively obtained from the plant mentioned under point 2 (=FTNF)

Restricted components:
(Agaric Acid, Aloin, Capsaicin, 1,2-Benzopyrone (Coumarin), Hypericine, Beta-asarone, 1-Allyl-4-methoxybenzene (Estragole), Hydrocyanic acid, Menthofuran, 4-Allyl-1,2-dimethoxybenzene (Methyleugenol), Pulegone, Quassin, 1-Allyl-3,4-methylene dioxy benzene (Safrole), Teucrin A, Thujone (alpha- and beta-), Camphor)
absent

6. Genetically modified organisms (GMO)

Referring to Regulation (EC) No 1829/2003 of 22nd September 2003 on genetically modified food and feed and Regulation (EC) No 1830/2003 of 22nd September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms (both published in OJ L 268 of 18th October 2003), we do, as a matter of course, check whether our products might possibly be subject to the requirements laid down in the a.m. legislations.
According to currently available information, we are convinced to the best of our knowledge and belief, that our products do not fall under the scope of the two above-mentioned regulations, i.e. have not been produced of genetically modified organisms nor contain genetically modified substances.

However, owing to fundamental considerations, this statement cannot be understood to imply an explicit assurance of a particular characteristic or property.

7. Food Grade

The product is generally suitable for the use in food

8. Microbiology and Heavy Metals

Due to random testing, we can confirm that it conforms to EC directive 1881/2006 (and its amendments) and to the German Flavour directive in terms of heavy metals. However, owing to fundamental considerations, this statement cannot be understood to imply an explicit assurance.

Due to the fact that not all batches are tested, we cannot guarantee any exact figures of the delivered lots. On special request and against absorption of the expenses we will be pleased to carry out tests before delivery.

9. Pesticides

Due to random testing, we can confirm that it conforms to EC directive 396/2005 (and its amendments). However, owing to fundamental considerations, this statement cannot be understood to imply an explicit assurance.

Due to the fact that not all batches are tested, we cannot guarantee any exact figures of the delivered lots. On special request and against absorption of the expenses we will be pleased to carry out tests before delivery.

10. Kosher status

The product is kosher.

11. Allergens

Allergens as per EC directive 2000/13, as well as ist amendments 2003/89 and 2006/142:

Ingredient	present/ absent
Cereals containing gluten (i.e. wheat, rye, barley, oats, spelt, kamut or their hybridised strains) and products thereof	absent
Crustaceans and products thereof	absent
Eggs and products thereof	absent
Fish and products thereof	absent
Peanuts and products thereof	absent
Soybeans and products thereof	absent
Milk and products thereof (including lactose)	absent
Nuts i. e. Almond (Amygdalus communis L.), Hazelnut (Corylus avellana), Walnut (Juglans regia), Cashew (Anacardium occidentale), Pecan nut (Carya illinoiesis (Wangenh.) K. Koch), Brazil nut (Bertholletia excelsa), Pistachio nut (Pistacia vera), Macadamia nut and Queensland nut (Macadamia ternifolia) and products thereof	absent
Celery and products thereof	absent
Mustard and products thereof	absent
Sesamsamen und Sesamsamenerzeugnisse	absent
Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO2.	absent
Lupin and products thereof	absent
Molluscs and products thereof	absent

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