BUSINESS PLAN

ISO/TC 93
Starch (including derivatives and by-products)

EXECUTIVE SUMMARY

The scope of ISO/TC 93 is standardization of terminology, methods of sampling, and methods of analysis and examination of starch. The field of activity covers native starch extracted from agricultural products (raw materials), starch which has been chemically or physically modified, starch derivatives such as sorbitol, dextrins, isoglucose and glucose syrups and starch by-products including glutens.

Approximately 52 % of standards published by ISO/TC 93 describe methods of analysis for starch and derived products; 36 % describe methods of analysis of native and modified starch and 12% describe methods of analysis of starch hydrolysis products. Currently, there are no standards for terminology or methods of sampling.

Starch is a white, granular, organic chemical produced naturally by all green plants. Starch is the most widespread storage form of energy in the plant kingdom. Globally, starch-based staples outweigh all other foodstuffs as sources of daily dietary energy. According to the latest FAO estimates they provide 53 % of the world's average daily calorie intake.The extraction of starch from agricultural commodities is one of the most important agro-industries worldwide. Globally, the major commodities from which starch is derived are corn (maize), cassava (from which tapioca starch is derived), sweet potato, potato and wheat. Starch may also be derived from barley, rice, sago palm and waxy xaize. Starch, in addition to being an important foodstuff worldwide, has a variety of industrial uses. Starch is used in food industries as a thickener, filler and binder. used to manufacture sweeteners, syrups and to feed enzymes in the manufacture of Monosodium Glutamate (MSG). Starch hydrolysis products are used in the soft drinks and brewing industries, in baked goods, confectionery, fruit and vegetable processing, dairy products and as a substrate for fermentation.

In 2000, the world starch output was estimated to be 48.5 million tons in size. This estimate included native and modified starches, and starch that is converted into syrups for direct use as glucose, isoglucose, and substrates in the form of dextrose syrups for fermentation into organic chemicals.

Technological advances in the starch industry in the last 50 years have led to the introduction of a wide range of functionally modified starches that meet producer and consumer needs. Modified starches have become a vital element in both food and non-food industries.

The growing industry demand for functional starches and world demand for natural foods rather than chemically treated food, resulted in some amount of interest in developing plants that produce starches that are directly suitable for industrial use without having to be modified. Additionally, organic starches from corn and potato have been manufactured as healthier, less expensive alternatives to modified starches. ISO/TC 93 expects to modify its work to incorporate the new technologies in the field.

Overall demand for starch products showed a 21.5% increase over the five-year period at an annual average growth rate of approximately 4% per annum. Demand for syrups grew more rapidly than that for dry starches worldwide. It is expected that the increase in starch demand during the 1990s will continue during the next decade and is estimated to be more than 71 million tonnes by 2010.

The main priority in the work of the committee is the development of internationally accepted methods of examination and sampling of starch, derivatives and by-products. The development of internationally accepted standard methods for the analysis and examination of starch products may effectively remove technical barriers to their trade. International markets usually require reliability and quality. By conforming to

standards that are internationally accepted, starch products would exhibit reliability and quality, which therefore ensures their competitiveness in markets and increases their international trade.

The main objectives of ISO/TC 93 are:

- To facilitate discussion between member countries on the necessity for international standards for particular items within the scope of the committee.
- To provide internationally accepted methods of examination and sampling of starch, starch derivatives and starch by-products.
- Harmonization of international standards for starch, derivatives and by-products in order to facilitate trade of these products.
- To encourage research, development and further interest in starch production, processing, use and trade.
- Further development of internationally accepted methods for analysis of functional properties of starch.
- Co-operation with the international organizations in liaison with the technical committee.
- To ensure that standards which have been published by the committee are up to date by adopting a timely review programme.
- To provide and promote the use of standard terminology for starch, derivatives and by-products.
- To develop a work programme which ensures that the market needs are met.
- To increase membership in the committee.

1 INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 140 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2 BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

- The state of the art in the field addressed by the scope of ISO/TC 93

The scope of ISO/TC 93 is standardization of terminology, methods of sampling, methods of analysis and examination of starch. The field of activity covers native starch extracted from agricultural products (raw materials), starch which has been chemically or physically modified, starch derivatives such as sorbitol, dextrins, isoglucose and glucose syrups and starch by-products including glutens.

The most frequent demand submitted to this committee is to develop International Standards for analytical test methods for starches and derived products. Approximately 52 % of our standards describe methods of analysis for starch and derived products; 36 % describe methods of analysis of native and modified starch and 12% describe methods of analysis of starch hydrolysis products. Currently, there are no standards for terminology or methods of sampling.

- The nature, sources and uses of starch, derivatives and by-products

Starch is a white, granular, organic chemical produced naturally by all green plants. Starch is the most widespread storage form of energy in the plant kingdom. Globally, the major commodities from which starch is derived are corn (maize), cassava (from which tapioca starch is derived), sweet potato, potato and wheat. Starch may also be derived from barley, rice, sago palm and waxy xaize. In its native form, after extraction, starch is a soft, white, tasteless powder that is insoluble in cold water, alcohol and other solvents.

Starch, in addition to being an important foodstuff worldwide, has a variety of industrial uses. Starch is used in food industries as a thickener, filler and binder. Starch can be converted to sugar and is used to manufacture sweeteners, syrups and to feed enzymes in the manufacture of Monosodium Glutamate (MSG). Hydrolyzing native starch slurry produces fructose syrup, glucose syrup, fructose, dextrose and maltodextrins. These products are used in the soft drinks and brewing industries, in baked goods, confectionery, fruit and vegetable processing, dairy products and as a substrate for fermentation.

Table 2.1.1 outlines non-food applications of starch products. Non-food uses of starch include use in the textile, paper and plywood industries. Dextrins (starch hydrolysis products obtained in a dry roasting process) are used in the adhesive industry. Starch (derived from cassava) is also used in the manufacture of pharmaceuticals.

Table 2.1.1 Non-food applications of starch and its derivatives

	Textiles	Adhesives	Paper	Building industries	Surfactant	Polymers	Pharma-ceutical industries	Cos-metics	Bio-industries
Native starches	✓	✓	✓	✓		✓	✓		✓
Etherified starches	✓	✓	✓	✓				✓	
Thinned starches	✓		✓	✓					
Oxidised starches	✓	✓	✓	✓			✓		✓
Dextrins	✓	✓	✓	✓			✓		✓
Malto-dextrins	✓				✓		✓		
Glucoses				✓			✓		✓

Dextrose	✓			✓	✓		✓		✓
Maltitiol							✓	✓	
Sorbitol					✓	✓	✓	✓	✓
Mannitol							✓		
Cyclo-dextrins	✓						✓		

After extraction, starch may undergo further processing by chemical or physical modification and can acquire high or low viscosities or become tolerant to heat or high or low levels of pH. Various elements of the starch molecule may be substituted with a range of chemicals to produce chemically modified starches known as starch esters and ethers. Starches may also be modified with oxidizing agents, alcohols and salts. Modified starches are used for paper products, for textiles and for the production of spray starch.

- Recent or expected technological changes and major innovations related to the industry sector, products or materials addressed by the scope of the ISO committee;

Technological advances in the starch industry in the last 50 years have led to the introduction of a wide range of functionally modified starches that meet producer and consumer needs. Modified starches have become a vital element in both food and non-food industries. Methods of modification are outlined in section 2.1. The term modified starch does not mean that the starch has been genetically modified. However, recently, the type of starch made by the plant as well as the amount of starch produced by the plant, particularly maize and potato has been changed using genetic modification. Potential sources of genetically modified material are corn syrup, glucose syrup, dextrose, fructose, and maltodextrin.

Modified starches that have been introduced to the starch market in recent years include:

- cold water swelling starches
- fat replacers for various applications
- resistant starches that resist digestion and analyze as fibre

The growing industry demand for functional starches and world demand for natural foods rather than chemically treated food, resulted in some amount of interest in developing plants that produce starches that are directly suitable for industrial use without having to be modified. Additionally, organic starches from corn and potato have been manufactured as healthier, less expensive alternatives to modified starches.

ISO/TC 93 expects to modify its work to incorporate the new technologies in the field. Such changes will be needed to develop methods for the detection of genetically modified materials.

- Categories of relevant stakeholders;

The main stakeholders of ISO/TC 93 directly concerned with its work are as follows:

- agricultural producers, particularly those involved in the production of starchy staples
- starch manufacturers
- private and governmental laboratories
- merchants/ retailers
- food and non-food industries such as paper, textile, plywood and adhesive
- research and educational institutions
- trade associations
- consumers
- standards bodies
- governmental and non-governmental agencies

- The concerns of relevant stakeholders:

  - The debate surrounding genetically modified food has left consumers with concerns about the safety of such foods. In the case of starch products, maize (corn) and potato plants are most commonly genetically modified and used to manufacture starch products. Genetically modified foods raise food safety, environmental safety and ethical issues.

  - Native starch is generally recognized as safe (GRAS). However, modified starch is often times considered an additive and its safety has been a concern among stakeholders. The world demand for natural/organic food instead of chemically treated food has led to regulations in some countries that govern the type and extent of modification.

- Real or potential technical barriers to trade related to the scope of the ISO committee, due to diverging national, regional or other standards and/or technical regulations. If possible, an estimation of their financial impact on trade should be provided.
  The use of some products of the starch industry, particularly in foods, are governed by national, regional and international food legislation, for example, modified starch for food use is restricted in terms of the chemical reagents that may be used for modification, their amount, the extent of the modification and the permitted levels of undesirable by-products or residues. Differences in these legislations may be potential technical barriers to trade.

  Other potential technical barriers to trade are:

  - Local labeling requirements
  - National regulations
  - Phytosanitary regulations
  - Government policies such as tariffs and import quotas
  - Fixed import prices

2.2 Quantitative Indicators of the Business Environment

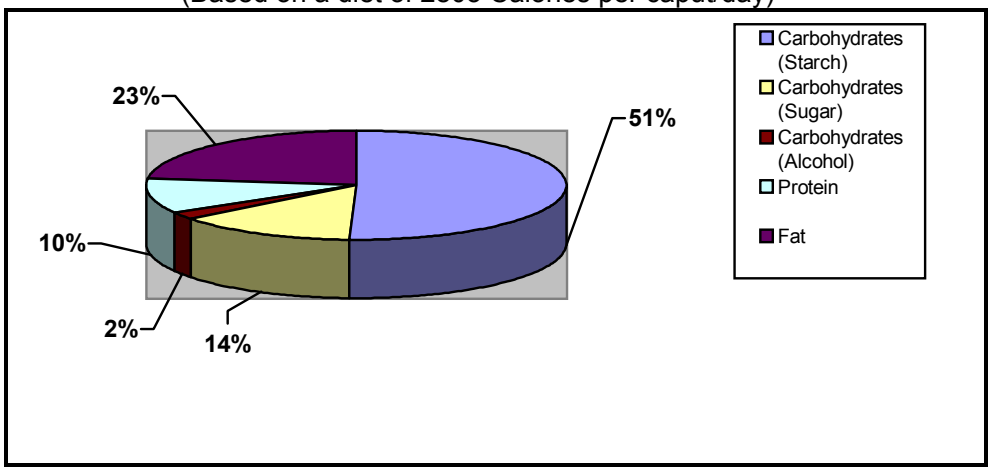
The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

- Starch based staples

Globally, starch-based staples outweigh all other foodstuffs as sources of daily dietary energy. According to the latest FAO estimates (2001), they provide 53 % of the world's average daily calorie intake. Figure 2.2.1 demonstrates the world caloric intake based on source of calories. The figure indicates that carbohydrates from starch provided 51% of the world's caloric intake in the late 1990's.

Figure 2.2.1 Distribution of calories by source- world, late 1990's
(Based on a diet of 2803 Calories per caput/day)



According to the FAO Statistics Division, the top produced food sources in the world (based on energy) are as follows:

1. Maize (Corn)
2. Wheat
3. Rice
4. Soybeans
5. Barley
6. Sugar Cane
7. Cow's Milk
8. Potatoes
9. Palm Oil
10. Rapeseed

Three major starch staples (maize, wheat and potatoes) and two minor starch staples (rice and barley) are among the commodities listed. Table 2.2.1 shows the global production of starch staples in 2003. Almost half of the world's corn is grown in North America (42%). Asia, the second largest corn producer in the world, grows about 26 %. Wheat is grown primarily in Asia, Europe and North America. Approximately 54% of the world's potato supply is grown in Europe and Asia. Cassava is primarily cultivated in the tropical countries such as those in Africa and Latin America and the Caribbean.

Table 2.2.1 Global production of starchy staples, 2003

metric ton

	CASSAVA	CORN/MAIZE	POTATOES	WHEAT	SWEET POTATOES
EU(15 countries)	-	34,067,990	43,314,559	91,590,379	69,635
North America	-	266,492,292	26,146,260	87,141,820	722,160
Latin America & Caribbean	32,273,099	93,426,898	16,667,373	23,482,508	1,939,038
South America	31,005,020	70,505,708	14,118,374	20,473,508	1,241,955
Oceania	184,090	500,500	1,773,120	24,418,010	614,100
Africa	100,739,306	44,492,035	12,224,368	19,124,246	11,354,204
Asia	54,468,994	163,372,701	123,779,419	247,645,314	121,957,351
World	**187,665,489**	**635,708,696**	**311,416,329**	**557,308,497**	**136,656,488**

Source: FAO, FAOSTAT

- Starch, derivatives and by-products

The extraction of starch from agricultural commodities is one of the most important agro-industries worldwide. In 2004, the world starch output was estimated to be 48.5 million tons in size. This estimate included native and modified starches, and starch that is converted into syrups for direct use as glucose, isoglucose, and substrates in the form of dextrose syrups for fermentation into organic chemicals.

Within the global industry, the United States of America is home to the largest starch industry, with 51 % of the world production followed by the European Union (17%). Table 2.2.2 depicts the relative sizes of the world starch industries distinguishing between the major agricultural commodities processed into starch. Maize is the main raw material supplying 81% of the global starch market. Over 8 % of world starch

production is derived from wheat. Maize and wheat starch manufacture also generates a significant amount of starch by-products, including gluten. Potatoes supply more than 5 % of world starch production. Other raw materials, primarily cassava, contribute the remaining 5 %. Protein and fibre are by-products of the manufacture of both potato and cassava (tapioca) starch.

In North America, maize is the primary source of starch. In Europe, maize, wheat and potato all contribute significant amounts of starch. Sweet potato, potato, maize and wheat are important sources of starch in Asia. A significant proportion of starch is manufactured from cassava in South East Asia. The patterns of raw material use for starch extraction around the world may be explained by prices and availability of the commodity in regional markets and the predominant type of starchy staples produced in the region (as can be seen in Table 2.2.1).

Table 2.2.3 demonstrates the European Starch market in 2002. The table indicates a slight increase in European starch production from 8.4 million tones in 2000 to 8.6 million tones in 2002.

Table 2.2.2 Starch production by raw material, 2000

million tons

	MAIZE	POTATOES	WHEAT	OTHER	TOTAL
EU	3.9	1.8	2.8	0.0	**8.4**
US	24.6	0.0	0.3	0.0	**24.9**
Other countries	10.9	0.8	1.1	2.5	**15.2**
World	**39.4**	**2.6**	**4.1**	**2.5**	**48.5**

Source: Evaluation of the Community Policy for Starch and Starch Products,2002 prepared by LMC International for European Commission – Director General Agriculture

Table 2.2.3 The European Starch Market, 2002

million tons

Total quantity of raw materials	20.5
Total quantity of starch produced	8.6
Consumption of starch and starch derivatives in Europe (excluding co-products)	7.9

Source: Association of Cereal Producers in the EU

- Total international trade in the industry sector/products or materials over the last 3 years
  Source: United Nations Commodity Trade Statistics Database (COMTRADE) of the United Nations Statistical Division

According to the data in Table 2.2.4 below, the importation of wheat starch increased by 18% between 2000 and 2002. The 2003 figure cannot be used in the analysis as the figure is constantly updated based on the reports submitted to the UN Statistical Division. The period 2000-2002 saw minimal increases in the importation of cornstarch, cassava and other starches and a minimal decrease in the importation of potato starch.

Table 2.2.5 shows the total import of starches by ISO/TC 93 members between 2000 and 2003. In the period examined, TC 93 member countries contributed significantly to the world starch imports; 77.8 % of total wheat starch import, 51.6 % of cornstarch import, 57.9% of potato starch import, 42.3% of total cassava starch import and 54.9% of total imports of other starches.

Table 2.2.4 Total import of starches between 2000 and 2003

US $

	2000	**2001**	**2002**	**2003***	**WORLD TOTAL**
Wheat Starch	88,233,686	113,321,216	104,073,505	34,690,158	340,318,560
Maize (Corn) Starch	294,668,004	303,541,785	299,093,546	70,206,106	967,509,448
Potato Starch	273,428,134	267,733,992	266,582,683	64,183,628	871,928,424
Cassava Starch	176,955,331	176,206,356	221,992,475	30,063,381	605,217,540
Other Starch	60,315,758	63,013,459	61,782,485	6,265,463	191,377,164

** Figures are based on currently available data provided by individual country reports. The figure for 2003 is constantly updated as information is reported to the UN Statistical Division*.

Table 2.2.5 Total import of starches by member countries of ISO/TC 93 for the period 2000-2003

Type of Starch	**ISO/TC 93 TOTAL (33 countries) US $**
Wheat Starch	265,086,167
Maize (Corn) Starch	499,668,073
Potato Starch	504,956,899
Cassava Starch	256,386,382
Other Starch	105,243,041

Table 2.2.6 shows the total export of starches between 2000 and 2003. The percentage export of wheat starch increased by 11%, while in the same period cornstarch saw only a slight reduction of 1.4%. The exportation of potato starch showed a reduction of 2%. Cassava starch exports saw a massive reduction of 82%. Other starch exports also saw a reduction of 5%.

According to Table 2.2.7, TC 93 member countries contributed significantly to the world starch exports in this period; exporting 71.6 % of the world total wheat starch, 58.6 % of total cornstarch, 23.7% of total potato starch, 77.5% of total cassava starch and 48.9% of total starches other than those previously mentioned.

Table 2.2.6 Total export of starches between 2000 and 2003

US$

	2000	2001	2002	2003*	WORLD TOTAL
Wheat Starch	79,299,188	66,494,945	71,158,617	28,478,186	245,430,932
Maize (Corn) Starch	247,354,215	254,598,496	250,744,561	21,602,959	774,300,244
Potato Starch	186,513,628	192,451,543	189,591,770	31,560,741	600,117,673
Cassava Starch	155,221,419	146,818,270	27,307,528	23,025,973	352,373,180
Other Starch	44,592,792	42,295,983	42,245,903	3,816,673	132,951,356

** Figures are based currently available data provided by individual country reports. The figure for 2003 is constantly updated as information is reported to the UN Statistical Division.*

Table 2.2.7 Total export of starches for the period 2000-2003 by member countries of ISO/TC 93

Type of Starch	ISO/TC 93 TOTAL (33 countries) US$
Wheat Starch	175,738,490
Maize (Corn) Starch	453,738,631
Potato Starch	141,937,807
Cassava Starch	272,946,352
Other Starch	65,014,481

Table 2.2.8 lists the main importers and exporters of starch between 2000 and 2003 highlighting member countries of the committee.

Table 2.2.8 Main importers and exporters of major types of starch between 2000 and 2003
(Countries are listed in decreasing order)

	IMPORTERS	EXPORTERS
Wheat Starch	France*; Germany* Belgium*; Netherlands* United Kingdom*	France*; Germany*; Belgium*; Netherlands*; United Kingdom*
Maize (Corn) Starch	France*; Germany* Canada; United Kingdom* USA	Netherlands*; USA Italy*; Germany*; South Africa

Potato Starch	United Kingdom*; USA; Japan*; Rep. Of Korea* Hong Kong	Germany*; Netherlands*; Hong Kong; Poland*; Belarus
Cassava Starch	Other Asia; China*; Japan* ;Indonesia*; Malaysia	Thailand*; Hong Kong; Brazil; Indonesia*; Netherlands*
Other Starch	Rep. Of Korea*; USA Japan*; Singapore; Italy*	China*; USA; Malaysia; Hong Kong; Pakistan

* Member countries of ISO/TC 93

Table 2.2.9 demonstrates the regional distribution of exports of the main starch products in 2000. The European Union (EU) supplied around 32 % of world native starch exports placing it as the leading supplier of native starches to the world market in 2000. Additionally, the EU exported 13% of total isoglucose and glucose and provided over one third of the world's exports of modified starch. US exports of native and modified starch were less than those of the EU. Most US exports were in the form of starch syrups. The largest export volumes of starch after those of the EU and US consist of exports of cassava starch predominantly from Thailand. In 2000, total exports of native and modified cassava starch from Thailand were close to one million tons.

Table 2.2.9 Regional distribution of exports of the main starch products, 2000

'000 tons

	EU	**US**	**OTHER COUNTRIES**	**WORLD**
Glucose & Isoglucose Syrups	144	534	400	1079
Modified Starch	407	176	600	1182
Native Starch	461	153	824	1438
Total	**1013**	**863**	**1824**	**3699**

Source: Evaluation of the Community Policy for Starch and Starch Products, 2002 prepared by LMC International for European Commission – Director General Agriculture

- Demand for starch and starch products:

  The demand for starch and starch products has historically grown at a rate similar to many other agriculturally based products. Table 2.2.10 compares the demand for total starch products for the USA, EU, Japan and rest of the world in 1995 and 2000. Dry starches include native and modified starches and dry sweeteners (dextrose, fructose, glucose solids and maltodextrins). Syrups cover all starch derivatives sold in liquid form such as glucose and isoglucose syrups and sorbitol.

  Overall demand for starch products showed a 21.5% increase over the five-year period at an annual average growth rate of approximately 4% per annum. Demand for syrups grew more rapidly than that for dry starches worldwide. In both years, the USA led the demand for both syrups and dry starches. It is expected that the increase in starch demand during the 1990s will continue during the next decade and is estimated to be more than 71 million tonnes by 2010.

  Demand for different types of starches is expected to rise. Cassava, for exmple is the staple food for 500 million people (FAO estimate 2002). International trade in the form of flour and starch are expected to show an increase over the next few years.

Table 2.2. 10 Composition of world starch demand, 1995 and 2000

million tonnes

	USA	EU	Japan	Rest of world	Total
1995					
Dry Starch Products	3.1	2.7	1.2	6.0	**12.9**
Syrups	16.7	3.3	1.2	5.7	**27.0**
Total	19.8	6.0	2.4	11.7	**39.9**
2000					
Dry Starch Products	3.5	3.5	1.3	6.9	**15.2**
Syrups	20.8	3.9	1.3	7.4	**33.3**
Total	24.3	7.4	2.6	14.2	**48.5**

Source: Evaluation of the Community Policy for Starch and Starch Products,2002 prepared by LMC International for European Commission – Director General Agriculture

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

The main priority in the work of the committee is the development of internationally accepted methods of examination and sampling of starch, derivatives and by-products.

The development of internationally accepted standard methods for the analysis and examination of starch products may effectively remove technical barriers to their trade.

International markets usually require reliability and quality. By conforming to standards that are internationally accepted, starch products would exhibit reliability and quality, which therefore ensures their competitiveness in markets and increases their international trade.

4 REPRESENTATION AND PARTICIPATION IN ISO/TC 93

4.1 Countries/ISO members bodies that are P and O members of the ISO committee

- The number of ISO member bodies that are P and O Members of the ISO committee

ISO/TC 93 comprises thirty-four (34) member countries; seven (7) participating countries and twenty-seven (27) observer countries. Table 4.1.1 demonstrates the member bodies and their membership status.

Table 4.1.1 ISO/TC 93 members and their membership status

P-Members	O-Members	
Jamaica –Secretariat	Austria	Ireland
Cuba	Belgium	Italy
France	China	Japan
Korea, Republic of	Czech Republic	Poland
Netherlands	Cote-d'Ivoire	Portugal
Spain	Estonia	Saudi Arabia
St. Lucia	Ethiopia	Serbia and Montenegro
	Finland	Slovakia
	Germany	Sri Lanka
	Greece	Switzerland
	Hungary	Thailand
	India	Tunisia
	Indonesia	Turkey
		United Kingdom

4.2 Analysis of the participation

5 The balance of participation among developed countries, developing countries and countries in economic transition, and the possible reasons for any imbalance;

Table 4.2.1 demonstrates the number of countries which are represented in ISO/TC 93 according to their income group. Please note that the countries classified as middle-income economies are not all at the same stage of development. Therefore, figure 4.2.1 demonstrates ISO/TC 93 member countries according to their development in order to differentiate developing countries from those in economic transition.

The committee comprises over 44 % (15) developed countries and approximately 56% (19) countries in economic transition and developing countries. Similarly, the proportion of developing countries that are member bodies of ISO (approximately 75%) is greater than that of developed countries. This may be explained by comparing the number of developed countries to the number of developing countries and those in transition. According to the International Monetary Fund, currently there are 53 developed countries, 125 developing countries and 28 countries in transition. It can therefore be inferred that the representation of developing countries and countries in transition in ISO and ISO individual committees would be greater than that of developed countries. Additionally, developing countries are becoming more aware of the importance of international standardization in international trade.

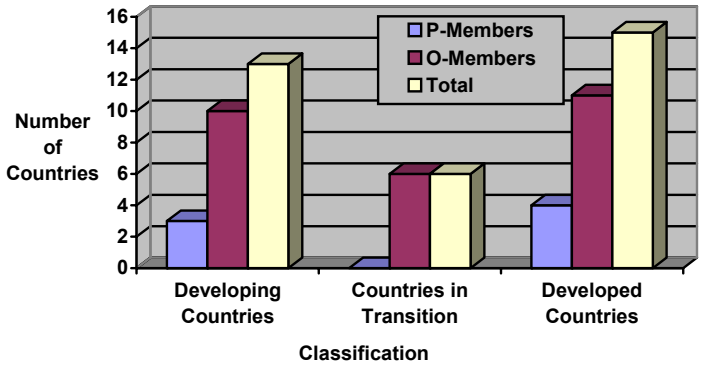
Of the 7 P-members of the committee 4 are developed countries. Developed counties are among the world's principal producers, importers, exporters and users of starch, derivatives and by-products and are therefore inclined to play a proactive role in international standardization as it affects international trade.

Table 4.2.1 Distribution of countries represented in ISO/TC 93 according to their income group*

Income Group	Sub-Group	No. of countries
Low Income		4
Middle Income	**Lower**	8
	Upper	7
High Income		15
Total		34

* *Classification of countries based on World Bank Classification of Economies, April 2004*

Figure 4.2.1 Distribution of ISO/TC 93 members according to their development* and membership status



* *Classification of countries based on International Monetary Fund (IMF) World Economic Outlook, 2003*

- The participation based on regions of the world, and the possible reasons for any imbalance;

The participation based on regions of the world is demonstrated in Table 4.2.2. North America, South America and Oceania are not currently represented in this committee. The committee comprises mostly of European countries (56%) followed by Asian countries (26%). The remaining 18% percent represents the participation of countries in the African and Latin America & Caribbean regions. In the region of Latin America and the Caribbean, the two member countries are both Caribbean countries therefore Latin American region is not represented in the committee.

As stated above the committee consists of 15 developed countries; 13 are European countries and the remaining 2 are Asian countries. The imbalance of participation can be explained by restating the fact that these developed countries and European countries on a whole are among the main producers and exporters of starch in the world and are therefore more inclined to participate in international standardization.

Table 4.2.2 Regional distribution of ISO/TC 93 Members according to their number and percentage

Region	Number of Countries	Percentage
Europe	19	56
Asia	9	26

Africa	3	9
Latin America & Caribbean	3	9

- The types of international organizations in liaison with the ISO committee;

The international organizations which are in liaison with ISO/TC 93 are as follows:

AAC	Association of Cereal Starch Producers in the EU
AOAC	Association of Analytical Chemists
CAC	Codex Alimentarius Commission
EC	European Commission
FAO	Food and Agricultural Organization of the United Nations
ICC	International Association for Cereal Science and Technology
ICUMSA	International Commission for Uniform Methods of Sugar Analysis
IFG	International Federation of Glucose Industries
IOCCC	International Office of Cocoa, Chocolate and Sugar Confectionary
OIML	International Organization of Legal Metrology
UFE	Union of Potato Starch Factories of the European Union
WCO	World Customs Organization

- Specific ISO member bodies, international organizations or regions of the world that the ISO committee would like to contribute to its work;

The main traders of major types of starch between 2000-2003 are demonstrated in Tables 2.2.8. Most of the major traders of starch and starch products are represented in this committee, however, among the top exporters USA, Hong Kong, Belarus, Brazil, Malaysia and Pakistan are not members of this committee at present. Unfortunately, USA has recently become a non-member of this committee. It is important to engage those countries that are major exporters of starch and those that are interested in expanding their starch market in the work of this committee.

Additionally, it would be desirable to engage countries in the regions are not represented or not adequately represented in the committee such as those in the African region.

.

5 OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

The main objectives of ISO/TC 93 are:

- To facilitate discussion between member countries on the necessity for international standards for particular items within the scope of the committee.
- To provide internationally accepted methods of examination and sampling of starch, starch derivatives and starch by-products.

- Harmonization of international standards for starch, derivatives and by-products in order to facilitate trade of these products.
- To encourage research, development and further interest in starch production, processing, use and trade.
- Further development of internationally accepted methods for analysis of functional properties of starch.
- Co-operation with the international organizations in liaison with the technical committee.
- To ensure that standards which have been published by the committee are up to date by adopting a timely review programme.
- To provide and promote the use of standard terminology for starch, derivatives and by-products.
- To develop a work programme which ensures that the market needs are met.
- To increase membership in the committee.

5.2 Identified strategies to achieve the ISO/TC's defined objectives

ISO/TC93 intends to use the following strategies to achieve its objectives;

- Establish priority of work items. Review of currently existing standards will be given highest priority.
- Continue co-operation and liaisons with international organizations
- Conduct physical meetings and use other means of communication such as e-mail and internet.

6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

- The term of office of the present chairperson Mme. Wagner will be completed at the end of 2005. It is therefore it may be necessary to find another person for this position.
- The committee has seven participating members including the secretariat. In order to prevent problems such as the lack of specific expertise and resources for future projects it will be necessary to engage more participating members.

7 STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC's structure, scopes of the ISO/TCs and any existing subcommittees and information on existing and planned standardization projects, publication of the ISO/TC and its subcommittees.

7.1 Structure of the ISO committee

7.2 Current projects of the ISO technical committee and its subcommittees

7.3 Publications of the ISO technical committee and its subcommittees

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO's technical work