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ESTABLISHMENT OF THE ARAB REGIONAL PACKAGING CENTRE

DP|RAB|83|020|11-02

Technical report: Packaging standardization*

Prepared for the Arab Industrial Development Organisation
and for the Arab Standardization and Metrological Organization,
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Hugo Bautista,
consultant in packaging standardization

Backstopping officer: J. Belo, Agro-based Industries Branch

United Nations Industrial Development Organization
Vienna

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S U M M A R Y

The purpose of the project is the aim of stablishing an Arab Regional Packaging Centre form the technical and performance points of view, with regard to its basic activities to prepare working technical guidelines for formulation of packaging standards in consultation with Arab Organization for Standardization and Metrology.

In view of the importance of identify the areas that are more relevant to the involvement of Arab Regional Packaging Centre. Combining desk research and on the sport field, the expert prepared Technical Guidelines in item differents specially for adopting and adapting standards of whole regional interest such as permitted quantities of prepacked foods and particularly packaging standards for non-process foods, processed foods, chemical products, dangerous goods, plastics, handicrafts, ceramincs, glass ware, others, labelling, load unit system and transport.

It is suggested a workplan for formulate packaging standards and code of practices during next three years, which it is desirable to commence the field work at the earliest possible.

The propose future standardization programme were discussed in detail with IMEC staff responsible of Packaging Committees of ASMO and SNIMA.

Recommendations were made with a view to improving the standards making activity thatfore the importance to achieve functional efficiency of standardization work with a permanent executive secretary for the Packaging Technical Committee nineteenth of ASMO.

1. INTRODUCTION

The general project is Establishment of the Arab Regional Packaging Centre, Resolution 15, 2nd ordinary session of the Government Council of AIDO with assistance of the UNDP and the IMEC in according to important role that packaging plays in the national economics of the Arab Countries.

For this purpose the Moroccan Packaging Institute (Institut Marocain de l'Emballage et du Condotionnement, IMEC) is undertaking an extension to an up-grading of some important capacities in order to be converted into ARPAC, and other project activities have been already taken up during the last years in determinated Arab countries.

The specific purpose of the present mission was prepare technical guidelines for formulation of regional standards particularly for food items and elaborate a programme of specific packaging standards to be proposed to Arab Industrial Development Organization .

Among other things, with IMEC staff was also considerated the following:

- International regulations on the packaging and transport of dangerous goods.

- Elaborate a quality control manual and references on quality control systems in developing countries.

- Further programme of packaging standards for pharmaceutical products in MOROCCO.

2. TERMS OF REFERENCE

The mission was carried out according to the job description for Project DP/RAB/83/020/11-02/31.7.E. called for an expert in Packaging Standardization, the terms of reference were :

1. Familiarize and analyse the regional packaging and packaging related standards already in existance in Arab countries.

2. Become acquainted with the aims and operating system of the ASMO in order to identify the areas that are more important and relevant to the involvement of a Regional Packaging Centre on Standardization.

3. Prepare guidelines for formulation of regional standards particularly for food items and elaborate a programme of specific packaging standards for the Arab countries to be proposed to AIDO for the short and medium terms.

4. Formulate draft packaging standards for a couple of food items for Arab Countries in consultation with the ASMO.

5. Train counterpart technical staff of the project on standardization.

6. Provide ad-hoc advice on packaging standardization whenever specificalyy requested.

3. CONDUCT OF THE MISSION

The mission was carried out from 1986 - 11 - 01 to 1987 - 01 - 15 according to following activities :

1986-11-02	Arrival to Vienna
1986-11-03 to 1986-11-04	Briefing at UNIDO, Vienna
1986-11-05	Arrival to Casablanca - Morocco
1986-11-06 to 1986-11-07	Briefing at ARPAC / IMEC
1986-11-10	Arrival to Baghdad - Iraq
1986-11-11	Briefing at AIDO and UNDP
1986-11-12 to 1986-11-25	Field mission Baghdad
1986-11-26	Arrival to Amman - Jordan
1986-11-27 to 1986-11-29	Field mission Amman
1986-11-30	Arrival to Casablanca - Morocco
1986-12-01 to 1987-01-09	Field mission Casablanca
1987-01-11	Arrival to Vienna
1987-01-12 to 1987-01-13	Debriefing at UNIDO, Vienna
1987-01-14	Leaving Vienna for Quito

4. FINDINGS

4.1. The situation of Packaging Standardization in Iraq

The Central Organization for standardization and Quality Control to be depent on Ministry of Planning and their administrative structure is as follows :

MINISTRY OF PLANNING

STANDARDIZATION DEPT.	QUALITY CONTROL Dept.
Mr YASS AL JANABY General Director	Mr Abdel Fatah ALRAWI General Director
- Food and Agricultural Products Mr Talal KHASSAN	- Laboratories
- Chemistry Miss Najat AUDO	
- Textiles	
- Plastics and Petrochemicals	
- Construction materials	
- Mechanic and Metrology	

The expert worked with technical personnel mentioned, they gave informations about the problems of food and compatibility of packaging, the present situation of food production in Iraq regarding to the quality control and certification systems and training necessity.

The Standardization Department have six divisions and the mains activities are :

. Preparation of national standards

. Participation in technical committees for formulation ASMO Standards

. Preparation of company standards

. Participation in technical committees in the preparation of International Standards.

4.1.1. National Standards

The procedure for preparation and adoption Iraqi standards.

The successive steps of the technical work are referenced of 1 to 7, these are defined as follows :

STEPS

1. The item has been included in the program of work of a Technical Committee

2. A draft proposal has been prepared and discussed by the Technical Committee

3. The drafts concerned departments has registered the draft proposal as a draft Iraqi Standard

4. The draft Iraqi Standard has been approved by the Central Committee

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5. The draft Iraqi Standard has been accepted by council as an Iraqi Standard

6. The Iraqi Standard has been published

7. The National Standard is compulsory

The last statistics of Iraqi Standards are already prepared since 1980, aproximately 700 standards including seventeen over packaging and labelling. Also the organization has been working how ISO member since 1964.

4.1.2. Participation in Regional Standardization

The Central Organization for Standardization and Quality Control, is an active member in ASMO and works as participating member in 28 Technical Committees, and are :

Paper, board and pulps
Technical drawings
Equipment for five protection
Road vehicles
Petroleum products and lubricants
Agricultural food products
Paints and varnishes
Terminology
Textiles
Chemistry
Laboratory glass-ware
Building construction
Plastics
Glass container

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Concrete
Cement and lime
Freight container
Leather
Packaging
Tobacco
Aluminium and minerals
Fertilizers and oil conditions
Detergents
Plastic pipes
Gypsum
Glass building
Solar energy
Safety

So the organization prepare standards in the fields above and give comments on the drafts that are done by the others Arabic countries as well as attend meeting for discussing the prepared drafts for ASMO.

4.1.3. Participation in International Standardization

The Central Organization for Standardization and Quality Control which is a member of ISO since 1964 and act as participating member in 5 Technical Committees :

Petroleum products and lubricants
Agricultural food products
Textiles
Plastics
Plastics pipes, fittings and valves for the transport of fluids.

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The Organization act through giving comments about the proposal drafts, almost the organization is an active member in Codex Alimentarius Commission.

4.1.4. Company Standards

The Company Standards represent a very important and special chapter in some aspects, because the industry in general is controlled by the government and the COSQC spend more time in this low level of the standardization, however, this essential level, perhaps the most important of all, to fall directly in the economy of country ; so every company small or large should present company standards to the organization to be reviewed by special Technical Committee in order to approved and adopted finally.

4.1.5. Equipment

In the COSQC there are many types of package testing equipment particularly for testing of materials like plastics, papers, glasses, metalcans, jerrycans, printed material, etc... The simulation test of packaging laboratory, non used, consists of:

Drop tester
Vibration machine
Incline-impact tester
Climatic camera
Compression tests
Revolving drum (non installed yet)
Impact strength

4.2. THE REGIONAL STANDARDIZATION (ASMO)

4.2.1. Arab Organization for Standardization and Metrology

There are a limited number of regional standards organisations, one of which is the Arab Organization for Standardization and Metrology (ASMO) in Amman, Jordan.

ASMO is specialized technical organization working under the auspices of the Arab feagure in the field of standards, metrology and quality control. Started its activities on March of 1968 with eighteen Arab States represented by their standards bodies (see listed in Appendix III)

4.2.2. Technical Committees and Arab Countries participation

The work of standardization is carried out by 33 technical committees. The decision to set up a technical committee is taken by General Assembly which also determines its ow, programme of work and it is here that the greatest eare must be taken to ensure that the projects to be studied are of proven interest to a majority Arab States members (see Appendix V).

IMEC is the Institution responsible of the packaging Technical Committee and one member of IMEC staff serve as executive secretary of the ninet eenth Technical Committee. However there are other types of technical committee which have connection with packaging.

The first type is those concerned with processed foods products (TC 3) whose scope includes packaging and labelling of the standardized products but whose standards for such products do not specify how the product will be packed but merely give general guidance. The second type is concerned with packaging materials, e.g. TC 6 plastics and paper and carboard TC 21 which are used in a great many

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industries of which packaging is but one : it is these committees which are responsible for those standards and not the Packaging Technical Committee nineteenth.

4.2.3. Procedures for preparing an ASMO Standard

The editorial practice in the preparation of ASMO standards appear in appendix VI this matter has been discussed and suggestions have be made to the executive secretary of packaging Technical Committee mineteenth.

4.2.4. Observation

Naturally the ASMO standards are written in Arabic language, that is the reason by no comments. The title in english and date of ASMO standard 137 is identified as requiring examination in the light of the latest position within ISO 780-1983 "Pictorial marking for handling of goods".

4.3. The Packaging Standardization in Morocco

The standardization work in Morocco goes back to the year 1962 when the Department of Industry was instructed to stablish a standard body by setting up technical committees to prepare standards.

In 1970, a Royal Decree instituted standardization and defined the tasks of the varius bodies responsible for it :

- Council for quality and productivity
- Service de la Normalisation Industrielle Marocaine (SNIMA)
- Technical Committees

SNIMA is a member of ISO and participating member of the ASMO, however, the work of packaging standardization is very poor.

At 1986, SNIMA has published 142 standards in different fields and only five on packaging standards, and are :

- Emballage en papiers et cartons, vocabulaire
- Emballages en bois, vocabulaire
- Emballages en Textiles : sacs en jute pour pains de sucre
- Emballages en textiles : sacs en jute pour céréales
- Emballages en textiles : sacs en jute pour minoteries

4.4. General aspects

From the observations made in the environs of Baghdad, Amman, Rabat and Casablanca cities, most of the forms of package and many of the packaging materials used

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in the industrialized countries are in use in the Arab World. Much of this is due to a transfer of technology by international companies, either by licence or investment and the neighborhood of the European continent as a potential market, must have a substantial influence on packaging practice.

The immediate problems appear to be :

4.4.1. The dependence on imported packaging materials, such as tinplate for metal cans, liner and medium papers for corrugated fiberboard boxes, which accounts for approximately 100 % and 80 %, respectively of the total requirements. This important part of the overall project is relevant for the formulation of standards.

The feasibility of developing trade exchange programmes between the Arab countries, to promote trade of packaging materials, develop plans for renewable resources, may greatly benefit the region and may in long time reduce dependence on imports.

4.4.2. A very limited number of regional packaging standards had been published by ASMO (22), seven of that number having been approved in october 1986 and the Arab states response to adopt these had been poor so far .

The work of standardization should be intensive in order to formulate packaging specifications, introduction of quality control, assurance measures for packaging materials and optimum use of the material.

4.4.3. Lack of knowledge of laws and international regulations affecting packaging standards particularly for dangerous goods, the need for which will become increasingly

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important with the development of the petro-chemical industry in determinated Arab countries productives of oil.

4.4.4. It is necessary to develop improved physical distribution techniques nationally and internationally in order to reduce costs and meet marketing requirements and the consequential effects such methods could have on packaging standards.

5. TECHNICAL GUIDELINES

5.1. Standardization of packaging

This is probably one of the most important tasks for ARPAC - ASMO - IMEC because involves a wide spectrum of activities such as preparing packaging standards, code of pactices and participating in regional planning for harmonius development of the Arab countries, emphasizing the importance at all levels of industry, trade and government, maintaining active relations between members countries and providing a forum for discussions with suppliers and users of packages, transport and insurance companies, etc.

5.2. Regional process

The first step of the standardization process is the formulation of standards of sizes (capacities) of package on base to the determination of a preferred range of sizes. Given a range of standard sizes the development of standardized shapes and dimensions is possible for each of those sizes and eventually lead to the complete interchangeability of components made by different manufacturers in all arab countries.

5.2.1. Technical Committee nineteenth

The programme of work for packaging standardization had been determinated prior to the experts' mission, the individual items on these plan were discussed with the executive secretary of the Technical Committee nineteenth, IMEC, and a summary of the more obvius possibilities are the following :

* Range of standard, capacities and dimensions
  - Glass bottles, general use
  - Plastic bottles, general use
  - Metal cans

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- two and three pieces
- small aperture for liquids
- wide aperture for points
- for lubricating oil
  (see appendix IX)

* Quality standards, types, dimensional and methods of measurement

  Plastic films, wrapping food stuffs and general use
  - Compatibility
  Paper, general use
  Cardboard, cartons
  Corrugated fiberboard, boxes

5.3. Packaging materials in contact with foods

The most widely know, regulations are those administred by the United States (Food and Drug Administration,FDA) under the authority of the food, drug and cosmetic act,1958. These require that if the food (or drink) is adulterated or contaminated by other substances whatever their source, including migrayion from the package or packaging material, it must be within the tolerance limits set by the FDA, except for carcinogens where the tolerance is NIL. If a material is not listed by the FDA it may not be used for the packaging of food or drink.

The European Economic Community has introduced international legislation and one "list of selected Directives on, and proposals for certain products, packaging, labelling and consumer protection" as each of the member countries of the EEC is required to adopt these Directives (see appendix IX).

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It is not expected that the FDA and EEC requirements will directly affect package standards but rather those for packaging materials.

Types of products subject to FDA laws and regulations:

Foods : coffe, tea, dairy products, seafoods, animal foods, spices, canned goods, fresh products, food aditives

Drugs : human and veterinary medicinal preparations

Cosmetics : lotions, creams, hair dyes, dentifrics and other beauty preparations.

Devices : legitimate medical therapeutic devices and device quackery

Biologies : blood and blood products, bacterial vaccines, viral vaccines, antitoxins

Radiation Producing products : television receivers, microware ovens and diagnostic X - ray systems and their components

Others :substances generally recognized as safe, adhesives for food packaging, polymeric substances.

5.4. Packaging of dangerous goods

This matter is very important and all the countries have adopted or incorporated this requirements in national standards or in other cases the international legislation is considered to be sufficient in order to facilitate international trade.(see appendix X)

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Regulations related to transportation of explosives and combustibles are being applied one hundred years back, due at the accidents happened during transportation.

Separating dangerous cargo from general merchandise and labelling it was a first step in the labelling of packages. Today the form, colors, symbols and warming labels have become seasonably standardized worldwide and their application to packages is legally required.

The United Nations Economic and Social Council has taken a leadership position on the international trade aspects of dangerous goods, by stablishing a committee of experts on transport of dangerous goods which published a book title "Transport of dangerous goods".

A summary of the most important international regulations on the classification, packaging, labelling, symbols and transport of dangerous goods, appears in Appendix X. Having in mind that all the under mentioned international agencies will be working on the United Nations System (UN).

AIR International Air Transport Association, IATA
SEA International Maritime Dangerous Goods , IMDG
RAIL International Regulations concerning the carriage of Dangerous Goods by Rail, RID
ROAD European Agreement concerning the International carriage of Dangerous Goods by Road, IDR.

Fortunately for ASMO, all European countries and a few Middle East and North African countries are signatories of RID, ADR, IATA and IMDG.

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5.5. Marking and Labelling

One special chapter of packaging standardization is the marking and labelling, the information that must be on the primary package is : the product name, the minimum shelf-life, the net contents, list of ingredients used, the name and address of the manufacturer, importer or retailer, instructions for storage or use.

In some cases the primary package and the transport package is the same, such as : 50 kg cement bag, fertilizer, etc. Generally all information is according to the metric system.

The ASMO standard N° 137-1973 should be reviewed according to ISO 780 - Packaging Pictorial Markings for handling of goods. Revised in 1983.

5.6. Physical distribution

The imperative need to reduce distribution costs and particularly transport costs, the development of Unit Load Systems of handling from the factories through to the point of retail sale and the use of the international ISO series 1 freight container have combined to focus attention on the need for dimensional compatibility between the package, the pallet or unit load, the storage equipment and the vehicle or freight container in which the goods are moved, these factors will become increasingly important in the preparation of packaging standards.

Of specific interest and portential importance for Arab Countries, exports to Europe, are the recommendations made jointly by the Economic Commission for Europe (ECE) and

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the organization for Economic Cooperation and Development (OECD) on the "Standardization of packaging for the international transport of fresh or refrigerated fruits and vegetables". The recommendations cover the dimensions and mechanical strength characteristics of rectangular packaging usuable on one or both types of standardized pallets (800 x 1200 mm and 1000 x 1200 mm) together with the tests to be passed" (see appendix IX).

5.7. References of potential interest

5.7.1. International Organization for Standardization (ISO).

ISO is the specialised agency for standardization. Its members are national standards institutions such as COSQC, SASO, SNIMA.

The work of the following ISO Technical Committees is relevant to packaging standards :

TC 51		Pallets
TC 52		Metal containers
TC 58		Gas cilinders
TC 63		Glass containers
TC 104		Freight containers
TC 122		Packaging
	SC 1	Packaging dimensions
	SC 2	Sacks
	SC 3	Packaging testing
	SC 4	Terminology

TD 4 (Technical Division) Distribution of goods.

The ISO packaging standards offer a good oportunity to facilitate international trade and they should be adopted without change by ASMO.(see appendix vii)

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5.7.2. Codex Alimentarius Commission

This commission was stablished to implement the joint FAO/WHO. Has 129 member nations and work in food standards programme. Under the general principles of the Codex Alimentarius, governments may accept Codex Commodity standards, Codex general standards and Codex Maximum Limits for Pesticide Residues in one of three ways : full acceptance, targe acceptance or acceptance with specified deviations. These are standards concerning to suggested workplan for ASMO.

5.7.3. United Nations Economic Commission for Europe (UN/ECE)

This commission at first prepared quality standards covering more than 40 products mainly for fruits and vegetables but later turned to drafting quality standards and packaging for non-edible horticultural products and animal products. Beside these, agreements on transport are being prepared by the commission.

5.7.4. European Economic Community (EEC)

The EEC issues directives, many of them directly or indirectly related to packaging. All legislative proposals, regulations and decisions are published in EEC's daily news letter "Official journal of the European Communities".
The EEC has a whole series of directives on the pre-packaging of all forms of drinks, foods tuffs sold by weight, other products such as cleaming products sold by weight, foods tuffs sold by volume, other products such as paints and lubricating oils sold by volume. These directives are likely to be followed by all Arab countries by means of ASMO.

5.7.5. Organization for Economic Cooperation and Development (OECD)

Develops recommendations on harmonization of national regulations on the development of technical regulations for

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specific products. It is also involved in arrangements for stablishing standards for certain services such as export credits for ships and agricultural products. These are publications and standards prepared by OECD related to packaging, these standards and publications are mostly about fresh fruits and vegetables bu OECD has also issued a draft code of pactice for frozen fish and sanitary regulations for fish and fish products.

5.7.6. Other sources of standards

These are several powerful influences which contribute to the standardization of packages, packaging materials and associated test methods namely :

Regulations which are designed to ensure that there is no harmful interaction between the package / package material and products intended for human consumption.

Regulations which control the weights or volumes in which certain pre-packed products may be sold (EN, EEC).

Regulations which specify the type, method of construction and / or performance test requirements for any product (ASTM).

De facto commercial standards which come about by long stablished use, the transfer of technology (by licence or by investment) by multinational companies, the standards making activity of international associations of package manufacturers or by the requirements of distributions (ITC).

5.8. Considerations for adopting or adapting standards

In order that international standards may fulfil their purpose of facilitating international exchange of goods and services, it is necessary that Arb States should wherever

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possible adopt international standards as ASMO standards. Some countries in the industrialized world, using their expertise, have adopted international specifications, regulations and standards, but many developing countries are engaged in the adoption process and are handicapped by the absence of know-how for the purpose.

5.8.1. Selection of standards

For the process of selecting standards suitable for adoption or adaptation, the first step should be the choice the packaging standards whose work has relevance and significance to the Arab Countries. It would be inapropriate for any expert than for such a brief period in three Arab countries to attemp to indicate the priorities for further standardization work for all Arab States, however, in view of the expert's wide experience in this area, have been prepared a workplan to be considerate by ASMO and TC 19 (see appendix VIII).

The TC 19 for examining the international standards will be able to decide wheter to adop the standards or adapt the same to suit the regional conditions. Generally the main international standards of interest ASMO, covering sampling, test methods of packaging materials and packages.

5.8.2. Adopting scheme

These are some basic standards which may be adopted in for regional use. These are international standards which are not dependent upon indigenous technology, climatic conditions, trade practices, etc and can therefore be adopted without any need for regional scruting and where an appropriate packaging standard exists (ISO, ASTM, etc) that standard should be adopted.

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5.8.3. Adapting scheme

The international standards which do not fall under any of the general considerations indicated, but are importants for ASMO, can also be considered for adaption under regional conditions, it is essential that they are subjected to scrutiny, keeping in view factors like statutory requirements, level of regional technological development, agro-climatic conditions and trade practices.

6. RECOMMENDATIONS

In order to improve the economy and techniques based in packaging standards for the Arab States, the following recommendations are formulated :

1. Review the list of key words "THESAURUS" draft, this work should be given to Arab Packaging specialists to comments on and adjust as necessary.

2. The list of ISO packaging standards select of priority interest for all Arab countries, appearing in appendix VII. These standards may be adopted without change as ASMO standards.

3. Formulation of standards to develop a rational range of capacities for each type of rigid packages, e.g. bottles, drums, jars, cans, etc, preferably based on 1 * 2,5 * 5 * 10 (type of progression) with the rationalization of capacities is more easy henceforth the standardization of dimensions for packages.

4. To prepare a regional programme of activities of standardization for next three years particularly for food items according to the suggest workplan appear in appendix VIII.

5. To achieve functional efficiency and secure systematic daily activities of Packaging Technical Committee nineteenth, it is adviced that a permanent executive secretary is assigned to this committee.

6. The actual practice in the preparing regional standards should be reviewed. For the preparation of new ASMO standards there is a proposal in section 5.8 of this report.

7. It is considereded indispensable that the Arab countries members of ISO or ASMO TC 19 participating actively in technical committees of ISO on packaging, where the programmes of work is likely to be direct concern to Arab world.

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8. The packaging technical committee nineteenth should watch the developments in the laws and international regulations concerning at packaging and study their effects in the Arab countries.

9. Closely collaboration between ASMO - TC 19. Actually the executive secretary of TC 19 does not know which packaging standards were approved by ASMO in October 1986.

10. In the planning of future seminars, every opportunity should be utilised to include lecture of standardization. This lecture should deal with the philosophy and necessity of standardization on the world, rather than describing certain packaging standards in detail, is also very important than organizing special seminars on packaging standardization, quality control, assurance of quality, preshipment inspection and certification for products and packages, dangerous goods regulations, etc....

11. Having in mind that the exporters may be required to use United Nations certified packages (UN System), the IMEC staff should become throughly familiar with laws, standards and varius international regulations, e.g. FDA, EEC, IATA, IMCO, CAC, etc....

12. Organize in each Arab country the collection and the recycling of used packages, forming five groups : papers and fiberboards, glasses, metals, plastics, and others. Significant results may be expected from a planned involvement with waste handling and recycling.

APPENDIX I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO 5 June 1986

PROJECT IN THE ARAB STATES

JOB DESCRIPTION
DP/RAB/83/020/11-02/31.7.E.

Post title Expert in Packaging Standardisation

Duration 3 months (3.0 m/m)

Date required September 1986

Duty station Casablanca, the Kingdom of Morocco, with possibility of travel to other Arab States.

Purpose of project The project aims at the development of the packaging and related industries in the Arab region through the establishment and advancement of the Arab Regional Packaging Centre, identification and promotion of national packaging centres/laboratories, formulation of regional packaging standards, etc. The specific purpose of the mission is to prepare working guidelines for formulation of packaging standards in consultation with ASMO (the Arab Institution responsible for standardisation) and draft a couple of packaging standards for food items.

Duties The expert will be assigned to the UNIDO project entitled 'Establishment of the Arab Packaging Centre' and work as a team member under the Chief Technical Adviser of UNIDO and in close co-operation with the counterpart Project Director. Specifically the expert will be expected to:

1. Familiarize and analyse the regional packaging and packaging related standards already in existence in Arab countries.

2. Become acquainted with the aims and operating system of the ASMO in order to identify the areas that are more important and relevant to the involvement of a Regional Packaging Centre on standardisation.

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3. Prepare guidelines for formulation of regional standards particularly for food items and elaborate a programme of specific packaging standards for the Arab countries to be proposed to AIDO for the short and medium terms.

4. Formulate draft packaging standards for a couple of food items for Arab countries in consultation with the ASMO.

5. Train counterpart technical staff of the project on standardisation.

6. Provide ad-hoc advice on packaging standardisation whenever specifically requested.

The expert will also be expected to prepare a mission report setting out his findings and recommendations to AIDO for further action.

Qualifications Packaging technologist with a University degree or equivalent qualifications and having experience in packaging standardisation.

Language English (French and|or Arabic an asset)

Background information The Arab Industrial Development Organization as an implementing agency for the Arab Governments and UNIDO as an executing agency for the United Nations, are jointly carrying out the project with the aim of establishing an Arab Regional Packaging Centre. It is also intended to promote and develop packaging centres| laboratories at the national levels as an integral part of the development of the packaging industries in the Arab States.

For this purpose, the Moroccan Packaging Institute (Institut Marocain de l'Emballage et du Conditionnement - IMEC) through the Royal Government of Morocco is hosting the project. During the last two years, a number of important activities were undertaken in Morocco and in some selected countries to upgrade important capacities in the field of packaging.

Formulation of regional packaging standards and development of this service has been considered to be a priority function of the project.

APPENDIX II

ORGANIZATIONS AND PLACES VISITED

In Baghdad - IRAQ

Arab Industrial Development Organization

United Nations Development Programme

Central Organization of Standardization and Quality Control

State Organization for consumer goods

Iraqi Supermarkets Department

Iraqi Company for Carton Manufacturing

Baghdad University. College of Agriculture

In Amman - JORDAN

United Nations Development Programme

Arab Organization for Standardization and Quality Control

In Rabat - MOROCCO

United Nations Development Programme

Service de la Normalisation Industrielle Marocaine

In Casablanca - MOROCCO

Institut Marocain de l'Emballage et du Conditionnement

Société OGDEN (corrugated fiberboard boxes)

Société CARNAUD (Metal cans)

Société SNEP (PVC plastic)

Société UNIMER/AMORA (Industries for canning)

1987 - 01 - 08

APPENDIX III

ARAB NATIONAL STANDARDS BODIES

1 - ALGERIA / INAPI

Institut Algerien de Normalisation et de propriete Industrielle,
Ministere des Industries Legeres.
Address : 5, Rue Abou Hamou Moussa,
B.P. 1021 , Alger .
TP : 635180
TG : INAPI - ALGER
TLX : 53086 INAPI DZ .

2 - BAHRAIN

Standard and Metrology Department.
Ministry of Commerce and Agriculture
Address : P.O.BOX 5479 - BAHRAIN .
TP : 729605
TLX : 9171 TIJARA BN.

3 - IRAQ / COSQC

Central Organization for Standardization and Quality Control
Address : BAGHDAD - ALJADIRIA
P.O.BOX 13032 - IRAQ.
TP : 7765180
TG : IROS - BAGHDAD
TLX : 213505 COSQC IK.

4 - JORDAN

Directorate of Standards and Measures
Ministry of Trade and Industry,
Address : P.O.BOX 2019 - JORDAN
TP : 661151 - 3
TLX : 21163 MINTR JO.

5 - KUWAIT

Standards and Metrology Department
Ministry of Petroleum and Industry
Address : P.O.BOX 2944 - KUWAIT.
Tp : 2463600
TLX : 2682 COMMIND KT .

6 - LEBANON / LEBANORM

Lebanese Standards Institution
Address : P.O.BOX 19 - 5144
Beirut - LEBANON
TP : 366480 , 366509 , 365982/3 ,
TG : LIBANORM - BEIRUT
TLX : 42271 LE.

7 - LIBYAN ARAB JAMAHIRIYA

Libyan Standards and Patent Section,
Industrial Research Centre
Address : TRIPOLI - P.O.BOX 3633 LIBYA
TP : 691511/19
TLX : 20038 BOHOUTH LY.

8 - MOROCCO

Service de Normalisation Industrielle Marocaine,(SNIMA)
Minstere du Commerce,de l'Industrie et du tourisme
Direction de l'industrie,
Address : 1 . place sefrou - Tour Hassan - RABAT (Maroc)
TLX : 31872 DIC MCI M

9 - OMAN

Directorate General for Specifications and Measurements.
Ministry of Commerce and Industry.
Address : P.O.BOX 550 , MUSCAT - OMAN.
TP : 704933 , 704942 , 704783 ,
TLX : 3351 WIZARAH MU

10- QATAR

Price Limitation and Consumer Protection Section
Ministry of Economy and Trade
Address : P.O.BOX 1968 , DOHA - QATAR
TP : 327656
TLX : 4488 ECOM DH.

11- SAUDI ARABIA

Saudi Arabian Standards Organization (SASO)
Address : P.O.BOX 3437 , Code No.11471 - RIYADH ,
TP : 4793332 - 4793062
TG : GIASY - RIYADH ,
TLX : 201610 SASO SJ.
Telefax : + 96614489235

12- SUDAN

Sudanese Standards Dep. (SSD)
Ministry of Industry,
Address : P.O.BOX 2184 - KHARTOUM,
TP : 34205
TG : SAADIN KHARTOUM,
Tlx : 22665 c/o SUKAR SD.
26002 c/o CTM /Cottom Textile Mills - SD.

13- SYRIA

The Syrian Arab Organization for Standardization and Metrology (SASMO),
Ministry of Industry,
Address : P.O.BOX 11836 - DAMASCUS ,
TP : 412725 - 450538
TG : SYSTAND - DAMASCUS
TLX : 411999 SASMO SY.

14- TUNISIA

Institut Nationale de la Normalisation et de la Propriete Industrielle,
Address : P.O.BOX 1012-23 - Le Belvedere - Tunis,
TP : 785922
TLX : 13602 INORPI TN.

15- UNITED ARAB EMIRATES

Department of Standardization and Metrology,
Ministry of Finance and Industry,
Directorate of Industry.
Address : P.O.BOX 433 - ABU DHABI ,
TP : 725141 , 724547
TLX : 22937 FEDFIN EM.

16- YEMEN, ARAB REBUPLIC

Standardization activities are carried out by :
- Department of Standardization and Metrology
- Ministry of Supply and Trade,
  Address : P.O.BOX 1706 - SANA'A
  TP : 74090 - 78233
  TLX : 2261 MSUR YE .

- Department of Standardization and Metrology
- Ministry of Economy and Industry,
  Address : P.O.BOX 1840 -SANA'A
  TP : 73605 - 74429
  TLX : 2360 SANAA YE .

17- YEMEN, PEOPLE'S DEMOCRATIC REBPUBLIC

Standardization activities are carried by :
- Production Department - Ministry of Industry
  Address : P.O.BOX 300 - Crater - Adan .
  TP : 51181/2
  TG : Ministry of Trade - Adan .

ORGANIGRAM OF ASMO

CENTRAL SECRETARIAT

GENERAL SECRETARY

ASSISTANT

STANDS. and Q.

- Food and Agricultural Products
- Quality
- Civil Engineering
- Electrical Engineering
- Mecanical Engineering
- Chemistry
- Textiles

METROLOGY

- Laboratories

TECHNICAL SERVICES

- Library
- Translation and publication
- Data processing
- Drawing, Printing
- Training

FINANCIAL-- And ADMINISTR.

- Administrative affairs
- Financial affairs

APPENDIX IV

LIST OF ASMO PACKAGING STANDARDS

T.C. (19) ASMO (ISO T.C. 51, 52 104 122)

PACKAGING

39 /1982	Hermetically sealed metal cans for food and drink-Standards
137/1973	Pictorial markings for handling of goods (General symbols).
138/1973	Dimensions and ratings of freight.
139/1973	Pictorial marking of transit packages containing photographic materials sensitive to radiant energy
140/1973	Marking of series 1 freight containers.
291/1984	Series 1 freight containers - Classification - External dimensions and ratings.
296/1982	Freight containers - Terminology.
343/1977	Series 1, freight containers - Spécification and testing - Part 1 : General cargo containers.
437/1982	Hermetically sealed metal cans for food and drink- Internal diameters of round cans.
438/1982	Hermetically sealed metal food containers - Capacities and diameters of round open-top and vent hole cans for milk.
439/1982	Hermetically sealed metal containers for food and drinks - Part 1 : Round open-top general purpose food cans.
440/1982	Hermetically sealed metal containers for food and drinks - Part II : Food cans for meat and products containing meat for human consumption.
443/1982	General purpose series 1, freight containers - Minimum internal dimensions.
450/1982	Freight containers - Coding, identification and marking.
537/1984	Dimensions of rigid rectangular packages - Transport packages.

ASMO Technical Committees and Arab Countries Participation

AMMAN, 1986-11-29

ASMO/TC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
ASMO General Secretariat						S	S								S						S									S			
Jordan	P	P	P	P	P	P	P	P	S	P	P	P	P		P	P	P	P		O	P	P	O	P		P	P	O	P	P			P
United Arab Emirates			O	O	O	O	O	O	O	O	O							P			O	O	O	O	O		O	O	O	O	O		O
Bahrain		P					O			P		P	O		O		O				O	O	O	O	O			P			P	O	O
Tunis	P	P	P	P	S	P	P	P	P	P	P	P	P		P	S	P	P		S	P	P	P	S	P	P	P	S	S	P	P	S	S
Algeria																																	
Saudi Arabia	P	S	S	P	P	O	P	P	P	P	P	P	P		P	P	S	P		P	O	S	P	O	P	S	P	P	P	P	S	P	P
Sudan	P	O	P	P	O	P	P	O	P	P	P	P	O		O	O	O	P		P	O	P	S	P	P	O	P	O	O	P	O	P	O
Syria	O	O	P	P	O	P	P	S	P	O	S	P	O		O	O	O	O		P	P	P	P	O	P	O	O		O	O			
Iraq	S	P	P	S	P	P	P	P	P	P	P	S	S		P	P	P	S		P	P	P	P	P	S	P	P	P	O	P	P	O	O
Oman	O	O	P	P	O	O	O	O	O	O	O	P	O		O	O	O	O			O	O	O	O	O	O	O	O	O	O		P	O
Palestine																																	
Qatar	O						O																				O	O	O				
Kuwait		P	P	P		P			P				P									P										
Lebanon			P	P	P				P	S	O	P	P		P	P		O		P	P	P	P	O	O	P	S	P	O			
Libya	P		P	P								P			O	O	O	P			O	O	O	P	O				P			
Morocco							P	P	P																						P		
Yemen (North)							P					O	O			O		O						O				O					
Yemen (South)		O					O		O		P	O																		O	O	P	P

Key : S = TC Secretariat - P = Participating member - O = Observer member.

No. and Title of ASMO Technical Committees:

1- Fertilizers and soil conditioners.
2- Aluminium Products.
3- Processed food products.
4- Non-processed food products.
5- Terminology.
6- Plastics.
7- Metrology.
8- Arab character in informatics.
9- Solar energy and applications.
10- Electric and Telephonic wires and cables.
11- Tobacco.
12- Cement, Lime and Gypsum.
13- Paints and varnishes.
14- Became part of TC 12.
15- Steel.
16- Glass in building.
17- Safety.
18- Petroleum products and Lubricants.
19- Packaging.
20- Technical drawings, limits and fits.
21- Paper and cardboard.
22- Chemistry.
23- Textile.
24- Leather.
25- Soap and detergents.
26- Electrotechnical Safety Requirements.
27- Electrotechnical Symbols and ratings
28- Steam boilers and pressure vessels.
29- Electrical accessories.
30- Building Code.
31- Cars, vehicles and their accessories.
32- Environment protection from pollution.
33- Roads and axial loads

APPENDIX VI

PROCEDURES FOR PREPARING A REGIONAL STANDARD

ASMO (1986-11-29)

STEPS

1. Proposal of formation of a technical committee may be by one of the Arab member bodies or by one of the technical committees or by Executive Board or the Central Secretariat or by one of the professional Arab Organizations or Unions.

2. The Central Secretariat circulates the proposal to the member bodies. The responses are submitted to the Executive Board or to the General Assembly.

3. The Executive Board approves the formation of the committee with a minimum of four active members, and delineates its scope of work.

4. The Executive Board nominates an active member for the office of technical secretariat.

5. The technical committee lays down its general work programme.

6. The general work programme of the technical committee is submitted to the General Assembly or Executive Board for adoption.

7. The technical committee lays down its annual programme within the frame work of its general work programme.

8. The work programme is distributed to the member bodies according to their consent and to their available technical abilities. The committee then begins to implement its programme.

9. The technical secretariat of the committee prepares the proposed draft Arab standards and circulates them to the members of the committee for study and comments.

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10. The draft standard is put in its final form after securing the approval of the majority of the member bodies or the committee then the General Secretariat circulates the draft to ASMO member bodies for voting.

11. If 75% of the votes are in favour of the draft it is then submitted to the General Assembly for adoption as an Arab Standard.

12. These procedures are usually carried out by correspondence, and the technical committee meets when necessary.

13. The technical secretariat submits a report on its work every six months to the central secretariat, so that the latter present it to the Executive Board.

APPENDIX VII

LIST OF ISO PACKAGING STANDARDS

Unit loads, materials handling

ISO/R 198-1961	Double deck flat pallets for through transit of goods
ISO/R 329-1963	Large pallets for through transit of goods
ISO 445-1984	Pallets for materials handling vocabulary - Trilingual edition
ISO/R 509-1966	Principal dimensions of pallet trucks
ISO 1121-1976	Conveyor belts - List of characteristics which may be required according to use
ISO 2148-1974	Continuous handling equipment Nomenclature Bilingual edition
ISO 3569-1976	Continuous mechanical handling equipment - Classification of unit loads
ISO 668-1979	Series 1 freight containers - Classification, external dimensions and ratings
ISO 830-1981	Freight containers - Terminology Trilingual edition
ISO 1161-1980	Series 1 freight containers - Corner fittings - Specification
ISO 3874-1979	Series 1 freight containers - Handling and securing
ISO 6517-1982	Aircraft - Containers - Base - restraine certified containers for the lower deos of high capacity aircraft

Packages : general

ISO 3394-1984	Dimensions of rigid rectangular packages - Transport packages
ISO/TR 8281/1-1983	Packaging - Estimating the filled volume using the flat dimensions - Part 1 : Paper sacks

TESTING

I. Testing, general

ISO 554-1976	Standard atmospheres for conditioning and/or testing - Specifications
ISO 558-1980	Conditioning and testing - Standard atmospheres - Definitions
ISO 2041-1975	Vibration and shock - Vocabulary Bilingual edition
ISO 3205-1976	Preferred test temperatures

II. Testing of packages

(i) Complete, filled, transport packages

ISO 2206-1972	Packaging - Complete, filled transport packages - Part I: Identification of parts when testing
ISO 2233-1972	Packaging - Complete, filled transport packages - Part II: Conditioning for testing
ISO 2234-1972	Packaging - Complete, filled transport packages - Part III: Stacking test
ISO 2244-1972	Packaging - Complete, filled transport packages - Part V: Horizontal impact tests (Inclined plane test, pendulum test)
ISO 2247-1972	Packaging - Complete, filled transport packages - Part VI: Vibration test
ISO 2248-1972	Packaging - Complete, filled transport packages - Part IV: Vertical impact test by dropping
ISO 2872-1973	Packaging - Complete, filled transport packages - Part VII: Compression test
ISO 2873-1973	Packaging - Complete, filled transport packages - Part VII: low pressure test
ISO 2874-1973	Packaging - Complete filled transport packages - Part IX: Stacking test using compression tester
ISO 2875-1973	Packaging - Complete, filled transport packages - Part X: Water spray test
ISO 2876-1973	Packaging - Complete, filled transport packages - Part XI: Rolling test

ISO 4178 1980	Complete, filled transport packages. Distribution trials - Information to be recorded.
ISO 1180/1 1980	Complete, filled transport packages. General rules for the compilation of performance tests schedules - Part 1: General principles.
ISO 4180/2 1980	Complete, filled transport packages. General rules for the compilation of performance test schedules - Part 2: Quantitative data

(ii) Freight containers

ISO 1496/1-1984	Series 1 freight containers - Specification and testing - Part 1: General cargo containers for general purposes
ISO 1496/2-1979	Series 1 freight containers - Specification and testing - Part 2: Thermal containers
ISO 1496/3-1981	Series 1 freight containers - Specification and testing - Part 3: Tank containers for liquids and gases
ISO 1496/5-1977	Series 1 freight containers - Specification and testing - Part V: Platform (container)
ISO 1496/6C-1977	Series 1 freight containers - Specification and testing - Part VIc: Platform based containers, open-sided, with complete superstructure

(iii) Pallets & pallet nets

ISO 4115-1980	Air-land cargo pallet nets - Specification and testing
ISO 4117-1980	Air and air-land cargo pallets - Specification and testing

(iv) Sacks

ISO 6599/1-1983	Packaging - Sacks - Conditioning for testing - Part 1: Paper sacks
ISO 7023-1983	Packaging - Sacks - Method of sampling empty sacks for testing

Testing of Packaging materials

(i) Materials in contact with food

ISO 6486/1-1981	Ceramic ware in contact with food - Release of lead and cadmium - Part 1: Method of test
ISO 6486/2-1981	Ceramic ware in contact with food - Release of lead and cadmium - Part 2: Permissible limits
ISO 7086/1-1982	Glassware and glass ceramic ware in contact with food - Release of lead and cadmium - Part 1: Method of test
ISO 7086/2-1982	Glassware and glass ceramic ware in contact with food - Release of lead and cadmium - Part 2: Permissible limits

(ii) Paper and board

ISO 186-1977	Paper and board - Sampling for testing
ISO 187-1977	Paper and board - Conditioning of samples
ISO 287-1978	Paper - Determination of moisture content - Oven drying method
ISO 438-1980	Paper - Determination of bulking thickness and apparent density
ISO 534-1980	Paper and board - Determination of the thickness of single sheets (and methods of calculation of the apparent density: of board)
ISO 535-1976	Paper and board - Determination of water absorption - Cobb method
ISO 536-1976	Paper and board - Determination of grammage
ISO 1924/1-1983	Paper and board - Determination of tensile properties - Part 1: Constant rate of loading method
ISO 1974-1974	Paper - Determination of tearing resistance Amendment 1 - 1977
ISO 2144-1983	Paper and board - Determination of ash
ISO 2470-1977	Paper and board - Measurement of diffuse blue reflectance factor (ISO brightness)

ISO 2493-1973	Paper and board - Determination stiffness - Static bending method
ISO 2528-1974	Sheet materials - Determination of water vapour transmission rate -Disl method
ISO 2758-1983	Paper - Determination of bursting strentgh
ISO 2759-1983	Board - Determination of bursting strength
ISO 3034-1975	Corrugated fibreboard - Determination of thickness
ISO 3035-1982	Single-faced and single-wall corrugated fibreboard - Determination of flat crush resistance
ISO 3036-1975	Board - Determination of puncture resistance
ISO 3037-1982	Corrugated fibreboard - Determination of edgewise crush resistance
ISO 3038-1975	Corrugated fibreboard - Determination of the water resistance of the glue bond by immersion
ISO 3039-1975	Corrugated fibreboard - Determination of the grammage of the component papers after separation
ISO 3687-1976	Paper and board - Determination of air resistance (Gurley)
ISO 3689-1983	Paper and board - Determination of bursting strength after immersion in water (Revision of ISO 3689-1976)
ISO 3762-1979	Paper - Preparation of a letterpress print for test purposes
ISO 3781-1983	Paper and board - Determination of tensile strength after immersion in water
ISO 3782-1980	Paper and board - Determination of resistance to picking - Accelerating speed method using the IGT tester (Pendulum or spring model)
ISO 3783-1980	Paper and board - Determination of resistance to picking - Accelerating speed method using the IGT tester (Electric model)

ISO 5627-1984	Paper and board - Determination of smoothness (Bekk method)
ISO 5636/1-1984	Paper and board - Determination of air permeance (medium range) - part 1: General method
ISO 5636/2-1984	Paper and board - Determination of air permeance (medium range) - part 2: Schopper method

(iii) Plastics

General

ISO 291-1977	Plastics - Standard atmospheres for conditioning and testing
ISO 293-1974	Plastics - Compression moulding test specimens of thermoplastic materials
ISO 294-1975	Plastics - Injection moulding test specimens of thermoplastic materials
ISO 295-1974	Plastics - Compression moulding test specimens of thermosetting materials
ISO 2818-1980	Plastics - Preparation of test specimens by machining
ISO 3167-1983	Plastics - Preparation and use of multipurpose test specimens
ISO 4607-1978	Plastics - Methods of exposure to natural weathering

Determination of properties

ISO 62-1980	Plastics - Determination of water absorption
ISO 75-1974	Plastics and ebonite - Determination of temperature of deflection under load
ISO 175-1981	Plastics - Determination of the effects of liquid chemicals, including water
ISO 176-1976	Plastics - Determination of loss of plasticizers - Activated carbon method
ISO 177-1976	Plastics - Determination of migration of plasticizers

ISO 178-1975	Plastics - Determination of flexural properties of rigid plastics
ISO 179-1982	Plastics - Determination of Charpy impact strength of rigid materials
ISO 180-1982	Plastics - Determination of Izod impact strength of rigid materials
ISO/R 182-1970	Plastics - Determination of the thermal stability of polyvinyl chloride and related copolymers and their compounds by splitting off of hydrogen chloride
ISO 183-1976	Plastics - Qualitative evaluation of the bleeding of colorants
ISO 305-1976	Plastics - Determination of thermal stability of polyvinyl chloride, related chlorine-containing polymers and copolymers, and their compounds - Discoloration method
ISO 458/1-1985	Plastics - Determination of stiffness in torsion of flexible material - Part 1: General method
ISO 458/2-1985	Plastics - Determination of stiffness in torsion of flexible materials - part 2: Application to plasticized compounds of homopolymers and co-polymers of vinyl chloride
ISO/R 483-1966	Plastics - Methods for maintaining constant relative humidity in small enclosures by means of aqueous solutions
ISO 489-1983	Plastics - Determination of the refractive index of transparent plastics
ISO/R 527-1966	Plastics - Determination of tensile properties
ISO 585-1982	Plastics - Non plasticized cellulose acetate - Determination of moisture content
ISO 604-1973	Plastics - Determination of compressive properties
ISO 844-1978	Cellular plastics - Compression test of rigid materials
ISO 845-1977	Cellular rubbers and plastics - Determination of apperent density

ISO 846-1978	Plastics - Determination of behaviour under the action of fungi and bacteria - Evaluation by visual examination or measurement of change in mass or physical properties
ISO 868-1978	Plastics - Determination of indentation hardness by means of a durometer (Shore hardness)
ISO 877-1976	Plastics - Determination of resistance to change upon exposure under glass to daylight
ISO 899-1981	Plastics - Determination of tensile creep
ISO/R 960-1969	Plastics - Determination of the water content in polyamides
ISO 974-1980	Plastics - Determination of the brittleness temperature by impact
ISO 1060/2-1978	Plastics - Homopolymer and copolymer resins of vinyl chloride - Part II: Determination of properties
ISO 1061-1975	Plastics - Unplasticized cellulose acetate - Determination of free acidity
ISO 1068-1975	Plastics - PVC resins - Determination of compacted apparent bulk density
ISO 1133-1981	Plastics - Determination of the melt flow rate of thermoplastics
ISO 1158-1978	Plastics - Vinyl chloride homopolymers and copolymers - Determination of chlorine
ISO 1159-1978	Plastic - Vinyl chloride-vinyl acetate copoymers - Determination of vinyl acetate
ISO/R 1183-1970	Plastics - Methods of determining the density and relative density (specific gravity) of plastics excluding cellular plastics
ISO 1184-1983	Plastics - Determination of tensile properties of films
ISO 1209-1976	Rigid cellular plastics - Bending test
ISO 1265-1979	Plastics - Polyvinyl chloride resins - Determination of number of impurities and foreign particles

ISO 1269-1980	Plastics - Homopolymer and copolymer resins of vinyl chloride - Determination of volatile matter (including water)
ISO 1622/2-1980	Plastics - Polystyrene moulding and extrusion materials - Part 2: Determination of properties
ISO 1663-1981	Cellular plastics - Determination of vapour transmission rate of rigid materials
ISO 1922-1981	Cellular plastics - Determination of shear strength of rigid materials
ISO 1923-1981	Cellular plastics and rubbers - Determination of linear dimensions
ISO 1926-1979	Cellular plastics - Determination of tensile properties of rigid materials
ISO 2039-1973	Plastics and ebonite - Determination of hardness by the ball indentation method
ISO 2039/2-1981	Plastics - Determination of Hardness by the ball indentation method - part 2: Rockwell hardness
ISO 2556-1974	Plastics - Determination of the gas transmission rate of films and thin sheets under atmospheric pressure - Manometric method
ISO 2561-1974	Plastics - Determination of residual styrene monomer in polystyrene by gas chromatography
ISO 2580/2-1982	Plastics - Acrylonitrile/butadiene/styrene (ABS) moulding and extrusion materials - Part 2: Determination of properties
ISO 2581-1975	Plastics - Rigid cellular materials Determination of "apparent"thermal conductivity by means of a heat-flow meter
ISO 2796-1980	Cellular plastics - Test for dimensional stability of rigid materials
ISO/TR 2799-1978	Cellular plastics - Determination of the temperature at which fixed permanent deformation of rigid materials occurs under compressive load
ISO 2896-1974	Rigid cellular plastics - Determination of water absorption

ISO 2897/2-1981	Plastics - Impact-resistant polystyrenes - Part 2: Determination of properties
ISO 2898/2-1980	Plastics - Plasticized compounds of homopolymers and copolymers of vinyl chloride - Part 2: Determination of properties
ISO 4582-1980	Plastics - Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or artificial light
ISO 4591-1979	Plastics - Film and sheeting - Determination of average thickness of a sample and average thickness of yield of a roll, by gravimetric techniques (gravimetric thickness)
ISO 4592-1979	Plastics - Film and sheeting - Determination of length and width
ISO 4593-1979	Plastics - Film and sheeting - Determination of thickness by mechanical scanning
ISO 4600-1981	Plastics - Determination of environmental stress cracking (ESC) - Ball or pin impression method
ISO 4608-1984	Plastics - Homopolymer and copolymer resins of vinyl chloride for general use - Determination of plasticizer absorption at room temperature
ISO 4611-1980	Plastics - Determination of the effects of exposure to damp heat, water spray and salt mist
ISO/TR 4616-1980	Plastics - Determination of the thermal stability of polyvinyl chloride (PVC) - Conductometric method
ISO 4651-1979	Cellular rubbers and plastics - Determination of dynamic cushioning performance
ISO 4894/1-1979	Plastics - Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials - Part 1: Designation
ISO 4898/2-1981	Plastics - Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials - Part 2: Determination of properties

ISO 6252-1981	Plastics - Determination of environmental stress cracking (ESC) Constant tensile stress method
ISO 6383/1-1983	Plastics - Film and sheeting - Determination of tear resistance - Part 1: Trouser tear method
ISO6383/2-1983	Plastics - Film and sheeting - Determination of tear resistance - Part 2: Elmendorf method

(iv) Prints & printing inks

ISO 2834-1981	Printing inks - Preparation of standardized prints for determination of resistance to physical and chemical agents
ISO 2835-1974	Prints and printing inks -Assessment of light fastness
ISO 2836-1974	Prints and printing inks -Assessment of resistance to water
ISO 2837-1974	Prints and printing inks -Assessment of resistance to solvents
ISO 2838-1974	Prints and printing inks -Assessment of resistance to alkalis
ISO 2839-1974	Prints and printing inks -Assessment of resistance to soaps
ISO 2840-1974	Prints and printing inks - Determination of the resistance of prints to detergents
ISO 2841-1974	Prints and printing inks - Determination of the resistance of prints to cheese
ISO 2842-1974	Prints and printing inks - Determination of the resistance of prints to edible oils and fats
ISO 2843-1974	Prints and printing inks Determination of the resistance prints to impregnation by wax paraffin wax
ISO 2844-1974	Prints and printing inks Determination of the resistance prints to spices

APPENDIX VIII

SUGGESTED WORKPLAN

FORMULATION OF ASMO PACKAGING STANDARDS

PRIORITY I

* Revision THESAURUS draft and ASMO standard N° 137 Pictorial markings for handling of goods

* Packaging weights, volumes and quantities (see Appendix IX)

1. NON PROCESS FOODS

P R O D U C T	PACKAGING MEDIUM MATERIALS RECOMMENDED	STANDARDS OR CODE OF PRACTICES TO BE FORMULATED
MEAT	PVDC PETP LDPE, HDPE PA	- Films - Shrink films
MILK	LDPE Black colored LDPE DYE LAMINATES TETRA PAK PURE PAK GLASS	- Film pouches - Plastic bottles - Cartons - Bottle returnable(glass
FRESH FRUIT and VEGETABLES	Natural fibres Artificial fibres LDPE, HDPE PVC PSE WOOD Solid fiberboard Corrugated fiberboard	- Sacks - Basque ts - Folding cartons - Code of Practice wooden boxes - Code of practice Corrugated fiberboard
EGGS	Moulded pulp PVC PSE PP	- Pulp trays packed in corrugated fiberboard (special chapter in code) - Plastic trays (two sizes
SEA FOOD (fresh)	PVC PSE PVDC, etc wood Corrugated fiberboard, Coated	- Plastic trays (two size - Code of practice wooden boxes (special chapter) - Code of practice corrugated fiberboard (special chapter)

2. PROCESSED FOODS

P R O D U C T	PACKAGING MEDIUM MATERIALS RECOMMENDED	STANDARDS OR CODES OF PRACTICES TO BE FORMULATED
DRIED MILK	LDPE HDPE LAMINATED TIN CANS	- Plastic pouches - Laminated foil pouches - Tin cans
EDIBLE OIL	HDPE PVC TIN CAN Mild steel	- Plastic bottles - Bottle returnable (glass) - Mild steel epoxy coalid - Tin cans - Drum (for bulk)
CONFECTIONARY CHOCOLATE AND COOKIES	LDPE HDPE LAMINATED PP CARDBOARD	- Plastic pouches - Code of practice for packing in cartons
CHEESE	LDPE HDPE PE-PAPER BOARD PETP-PE	- Code of practice containers for dairy Products
BREAD	LDPE PETP PVDC Ps PP	- Plastic bags - Wrapper specifications
COFFEE, COCOS (powdered)	LAMINATED GLASS	- Laminated specifications - Bottle returnable (glass
FRUIT JUICES	PVDC LDPE GLASS	- Plastic bottles - Glass bottles
FRUITS AND VEGETABLES (Preserved)	TIN CANS LAMINATED GLASS	- Code of practice Containers for dairy products
SOFT DRINKS	ALUMINIUM GLASS PVC PVDC	- Aluminium cans - Bottle returnable - Plastic bottles

3. CHEMICAL PRODUCTS

P R O D U C T	PACKAGING MATERIALS RECOMMEDED	STANDARDS OR CODE OF PRACTICES TO BE FORMULATED
PHARMACEUTICAL	GLASS ALUMINIUM PVC PVDC LAMINTATES	- Ampoules, vials, bottles (glass) - Al foil and Al Collapsible tubes - Plastic containers for pharmaceutical use - Blister,bubble,skin and strip packs
DETERGENTS and SOAPS	LDPE HDPE COTATED PAPER	- Plastic bags - Wraper for soap cake
COSMETICS	GLASS ALUMINIUM LAMINATED PLASTICS FILMS PVC METAL MATERIALS	- Code of practice for cosmetic containers in general
FERTILISERS	PP	- Polypropylene woven sacks
PAINTS	METAL PVC HDPE	- HDPE blown - Drums, cans - Aerosol products (see IMDG, IATA regulations
OIL PRODUCTS	Metal Plastics in general	Code of practice for containers for oil products (see Dangerous goods, UN Regulations)

4. TEXTILE AND PRODUCTS

P R O D U C T	PACKAGING MATERIALS RECOMMENDED	STANDARDS OR CODE OF PRACTICE TO BE FORMULATED
CLOTH	HDPE LDPE Corrugated fiberboard Wood	- Rolling and bag in a corrugated fiber board - Wooden cases - Pallets
DRESSES	Corrugated fiberboard	- Corrugated fiberboard boxe:

5. GLASS, CERAMICS AND PORCELAIN PRODUCTS

P R O D U C T	PACKAGING MATERIALS RECOMMENDED	STANDARDS OR CODE OF PRACTICE TO BE FORMULATED
GLASS BUILDING GLASS WARE BOTTLES,GLASSES, TRAYS, etc HANDICRAFTS	WOOD CORRUGATED FIBERBOARD CUSHIONING MATERIALS	CODE OF PRACTICE FOR DELICATE ARTICLES (including accessories)

6. PLASTIC and PRODUCTS

P R O D U C T	PACKAGING MATERIALS RECOMMENDED	STANDARDS OR CODE OF PRACTICE TO BE FORMULATED
Fibres, particles, wool	Native fibres PP HDPE LDPE	- Sacks for bulk
Sheets, films	Wood Corrugated fiberboard	- Wooden cases - Corrugated fiberboard boxes - Pallets
Pipes, profiles	Metal PP	- Unit load (specifications)
Pannels, Toy s,Trays, bottles, drums, containers, etc	Wood Corrugated fiberboard LDPE HDPE	- Plastic big bags - Wooden cases - Corrugated fiberboard - Pallets

7. WOODEN MATERIAL and PRODUCTS

P R O D U C T	PACKAGING MATERIALS RECOMMENDED	STANDARDS OR CODE OF PRACTICES TO BE FORMULATED
FURNITURE	Moulded pulp Fiberboard Corrugated Fiberboard	- Code of practice for packaging furniture (including accessorie
BOARD,PANEL, COMPARTMENT	Plastic films Wood Plywood Pertichboard Corrugated fiberboard	- Wooden crates, plat forms, special pallets - Corrugated fiber-board with plastic protection
PAPER,CARDBOARD, FIBERBOARD	Plastic films Wood Paper	- Plastic - Coated paper, kraft - Corrugated fiber-board boxes - Cartons - Wooden cases
HANDICRAFTS	Plastic films Corrugated fiberboard	- Plastic bags - Corrugated fiber-board boxes - Corrugated fiber-board with plasti: protection

8. O T H E R S

P R O D U C T S	PACKAGING MATERIALS RECOMMENDED	STANDARD OR CODE OF PRACTICE TO BE FORMULATED
CEMENT	Kraft paper	- Multiwalled paper sacks
RETAILING (in general)	PE Paper	- Polyethylene bags for general purposes - Paper bags for general purposes
FLOWERS	Paper Corrugated fiberboard Fiberboard	- Code of practice

APPENDIX IX

REFERENCES OF POTENTIAL INTEREST

E E C DIRECTIVES

Packaging, weights, volume, quantities, labelling and consumer protection

	DIRECTIVE AND DATE	OFFICIAL JOURNAL
* Making up by volume of certain prepacked liquids	75/106 of 1974-12-19	1975-02-15, L 42
	78/891 of 1978-09-28	1978-11-04, L 311
	79/1005 of 1979-11-23	1979-12-04, L 308
	85/10 of 1984-12-18	1985-01-08, L 5
* Making up by weight or by volume of certain pre-packaged products	76/211 of 1976-01-20	1975-02-15, L 42
	78/891 of 1978-09-28	1978-11-04, L 311
* Measuring of the standard mass per storage volume of grain	71/347 of 1971-10-12	1971-10-25, L 239
* Measuring systems for liquids other than water	77/313 of 1977-04-05	1977-04-28, L 105
	82/625 of 1982-07-01	1982-02-27, L 252
* Nominal quantities, ranges, permitted for certain pre-packaged products	80/232 of 1980-01-15	1980-02-25, L 51
	772 FINAL of 1984-01-06	1984-01-25, C 18
* Claims made in labelling, presentation and advertising of foodstuffs	159 FINAL of 1981	1981-08-06, C 198
* Labelling, presentation and advertising of foodstuffs for sale to the ultimate consumer	79/112 of 1978-12-18	1979-02-08, L 33
	626 FINAL of 1982	1982-01-26, C 281
	334 FINAL of 1984	1985-01-03, L 2
	83/463 of 1983-07-22	1983-09-15, L 255
* Misleading and unfair advertising	84/450 of 1984-09-10	1984-09-19, L 250

UN / ECE General Conditions of sale

Fresh fruit and vegetables (including citrus)	ECE/AGRI/40 (1979)
Dry (shelled and unshelled) and dried fruits	ECE/AGRI/41 (1979)
Arbitration Rules for certain categories of perishable agricultural produce	ECE/AGRI/42 (1980)
Potatoes	ECE/AGRI/42 (1980)

CODEX ALIMENTARIUS COMMISSION

Processed fruits and vegetables	CAC/VOL II
Processed meat and poultry products and soups and broths	CAC/VOL IV
Fish and fishery products	CAC/VOL V
Labelling	CAC/VOL VI
Quick frozen fruits and vegetables	CAC/VOL VIII
Fruits juices	CAC/VOL X

A S T M

American society for Testing and Materials
Annual book of ASTM standards, last 1986
Volume 15-09 PAPER ; PACKAGING ; FLEXIBLE BARRIER MATERIALS
1916 Race St. / Philadelphia, PA 19103 U.S.A.

I C H C A

International Cargo Handling Co-ordination Association
General informations on Unit load systems, handling and transportation.
Abford House, 15 Wilton Road, London SW1 V 1LX

APPENDIX X

DANGEROUS GOODS

EEC Directives relating to the packaging, labelling, marking and transport

	DIRECTIVE AND DATE	OFFICIAL JOURNAL
* Classification, packaging and labelling of dangerous substances, general directive	67/548 1967-06-27	1967-08-16
	79/370 1979-07-30	1968-09-23, L 250
	81/187 1981-03-26	1981-04-02, L 88
	82/232 1982-03-25	1982-04-21, L 106
	83/467 1983-09-29	1983-09-16
	84/449 1984-04-25	1984-09-19, L 251
* Restrictions on the marketing and use of certain dangerous substances and preparations	76/769 1976-07-27	1976-09-27
	79/663 1979-07-24	1979-08-03, L 197
	82/828 1982-12-03	1982-12-10, L 350
	83/264 1983-05-16	1983-06-06, L 147
* Benzene, restrictions on the market and use	82/806 1982-11-22	1982-12-01, L 339
* Clorofluorocarbons (in aerosols)	80/372 1980-03-26	1980-04-03, L 90
	82/795 1982-11-11	1982-11-25, L 329
* Paints, varnishes, glues, and related products	77/728 1977-11-07	1977-11-28
	COM (81) 274 FINAL	1981-06-02
	83/265 1983-05-16	1983-06-06, L 147
* Pesticides, agricultural	COM (96) 427 FINAL	
* Solvents	73/173 1973-06-04	1973-09-11
	80/1271 1980-12-22	1980-12-31, L 375
	82/473 1982-06-10	1982-07-21, L 213
		1983-05-18
* Tris phosphate, restrictions on the marketing and use	79/663 1979-07-24	1979-08-03, L 197

APPENDIX XI

LIST OF ABREVIATIONS USED

ADR	European agreement concerning the international carriage of dangerous goods by road
AIDO	Arab Industrial Development Organization
ASMO	Arab Organization for Standardization and Metrology
ASTM	American Standards for Testing and Materials
ARPAC	Arab Regional Packaging Centre
CAC	Codex Alimentarius Commission
CEN	European Committee for Standardization
COSQC	Central Organization for Standardization and Quality Control
E C E	Economic Commission for Europe
E E C	European Economic Community
F A O	Food and Agriculture Organization
F D A	Food and Drug Administration
IATA	International Air Transport Association
IMCO	Intergovernmental Maritime Consultative Organization
IMDG	International Maritime Dangerous goods Code
IMEC	Institut Marocain de l'Emballage et du Conditionnement
I S O	International Organization for Standardization
I T C	International Trade Centre
OECD	Organization for Economic Cooperation and Development
R I D	International Regulations concerning the international carriage of dangerous goods by rail
SASO	Saudi Arabian Standards Organization
SNIMA	Service de la Normalisation Industrielle Marocaine
U N	United Nations, recommendations on "Transport of dangerous goods" SYSTEM.
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization