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# Classification

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socially appropriate technology international information services  
servicios internacionales de informacion sobre tecnologias socialmente apropiadas  
services internationaux d'information pour la technique

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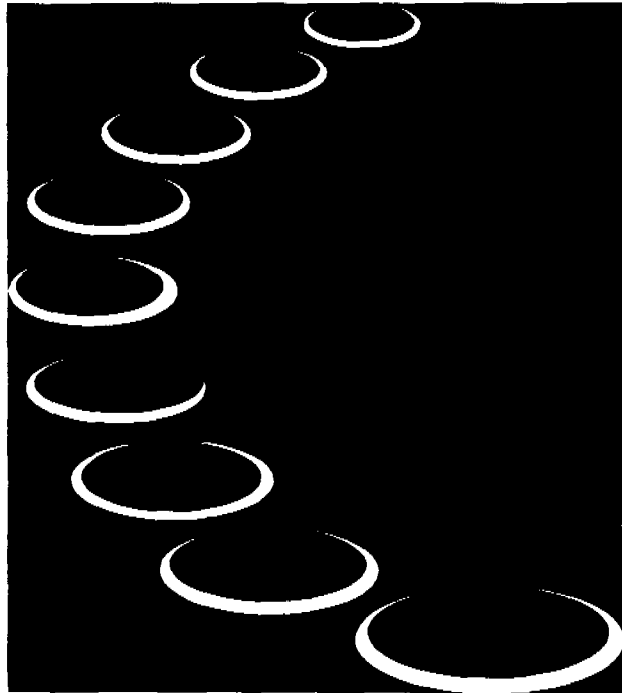
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Second printing: 1983

*The new, third edition  
of the definitive subject listing  
on technology, environment  
and sustainable development*

**The Satis  
Classification**

*on technology, environment  
and sustainable development*



*Sustainable development requires new approaches, new relationships, new understandings, new models, between people, cultures and economies, and between people and the rest of the Planet. Above all, between people and our accumulated experience and knowledge.*

*New ways of using our common heritage of information.  
New ways for the information professional.*

*The new Satis Classification is one such way.*

Now in its third edition, the Satis Classification is an **essential tool** for all those working in information for practical sustainable development.

It is used by hundreds of organisations worldwide in their information services with farmers and planners, entrepreneurs and researchers, community groups and extension workers, funder agencies and evaluators, change agents and public servants, all people working in a multitude of ways to eliminate poverty, to redistribute wealth, to protect the environment, to get tomorrow.

As well as **comprehensive, practical coverage** of how to make, manage and maintain all goods and services for development, and how to organise and communicate, it covers all components and aspects of sustainable development.

The Satis Classification will **add value to your information**, whether you have 200 or 200,000 pieces of information, books, reports, films, models, or tape-recordings, all of which can be separately identified, by subject, aspects, and type of document, in one simple code. Whether your work in environment and development is ecological, environmental, economic, commercial, cultural, technical, managerial, legal, social, geographical, scientific, educational, financial, as a practitioner, a researcher, or at policy level, highly subject-specific, or more generalist, or (more appropriate) a combination of these, perhaps even holistic, the Satis Classification gives you **unparalleled depth and breadth of subject coverage**.

Designed by an international, intercultural team of users and specialists, the new Satis Classification is based on fifteen years evolution and evaluation in information centres world-wide. Its editors, Erica Goedheer, Josine van der Voort and Paul Osborn, have accumulated more than four decades experience in information management and international development.

# *One thousand specific subject entries*

are organised within a numerical, hierarchical structure. Additional codes highlight special parts of a subject, such as gender issues, cultural conditions, recycling or cost aspects, and to indicate the form of the indexed document. All 3,250 descriptor terms used in the subject entries are featured in an alphabetical index (and in the extensive Satis Thesaurus, available as a separate publication.) The principal subjects covered are:

## **nature, people and society**

*science and technology*  
*basic science*  
*research and development*  
*technology transfer*  
*sustainable development*  
(defined as 'the integration of human activity  
in the overall ecology')  
*cooperation for sustainable development*  
*development models*  
*industrial development*  
*rural, urban and regional development*  
*ecology and environment*  
*the earth as a living organism*  
*impact of human activities*  
*climate*  
*land, seas, oceans*  
*space*  
*ecosystems, ecozones*  
*environmental protection, pollution*  
*disasters*  
*culture and society*  
*demography*  
*sociology*  
*emotion and belief*  
*arts, language, religion, politics*  
*gender issues*  
*tourism*  
*organisation and management*  
*enterprise development*  
*networking*  
*project management*  
*human resource development*  
*financial management*  
*evaluation techniques*  
*transport and distribution*  
*information science*  
*publishing*  
*communication*  
*broadcasting*  
*telecommunications*  
*marketing; market research*  
*advertising*  
*consumer affairs*  
*education and training*

## **energy**

*fossil fuels*  
*biomass fuels*  
*solar energy*  
*wind energy*  
*water power*  
*muscle power*  
*energy storage and distribution*

## **water**

*water lifting*  
*water supply*  
*water treatment*

## **sanitation**

## **waste disposal**

## **recycling**

## **agriculture**

*agricultural systems*  
*agricultural equipment and techniques*  
*plants and crops*  
*animal husbandry*

## **forestry**

## **aquaculture and fisheries**

## **food science**

*food technology*  
*food processing*  
*food storage*

## **manufacture, engineering and services**

*mining*  
*textile and leather processing*  
*wooden products*  
*paper products*  
*chemicals; chemical products*  
*metal products*  
*electrical and electronic products*

## **habitat**

*human settlement*  
*building design, techniques*  
*building materials*  
*civil engineering*  
*infrastructure*

## **health**

*nutrition*  
*social medicine*  
*health services*  
*medicine production*

## Clear presentation

Two major reasons for the success of the Satis Classification are its clear text and its graphic presentation which illustrates the subject hierarchy. The example on the left is taken from section 5, which covers the processing of agricultural products. Each section is divided into subject groups, the example shows the beginning of one section. The example on the right is taken from the alphabetical index.

### FOOD PROCESSING PER PRODUCT

techniques/ equipment for food preparation for animal and human consumption, all operations per product

- processing, quality control
- for general food processing techniques see: 52\*
- for storage and packing see: 54

#### 530 food processing per product: generalities

#### 531 processing of cereals and starchy products

- flour and yeast production

##### .10 cereals

- .11 rice
- .12 maize; corn
- .13 wheat
- .14 sorghum
- .15 millet
- .16 barley

- \*\*\*.94 manufacturers' catalogues dealing with any specific subject, see note 2
- 120.20 mapping
- 162.60 maps
- \*\*\*.92 maps dealing with any specific subject, see note 2
- 615 marble quarrying
- 47\* marine biology
- 121.50 marine environment
- 537 marine food products
- 250 marine power
- 470.10 marine resource management
- 120.30 maritime law
- 166 market research
- 16\* marketing
- \*\*\*.06 marketing aspects of any specific subject, see note 1
- 712.70 markets, covered
- 221 marsh gas

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## CLASSIFICATION

1	Man and Society
9	Energy and Power
17	Water, Sanitation and Waste Disposal
22	Agriculture, Forestry Works, and Aquaculture and Fisheries
34	Agricultural Products Processing and Food Production
39	Manufacture, Engineering and Services
47	Building and Construction Works
52	Health

*Subject groups within these macrogroups  
are listed on the fold-out sheet at back*

## ALPHABETICAL INDEX

*issued as separate volume*

KD 4776

# introduction

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## 1. Purpose of the scheme

This scheme has two related functions:

- a. indexing, that is classifying, ordering and storing documents in order to build up systematically a store of knowledge
- b. easier retrieval of stored information.

These two functions can be performed internally, within an organisation as part of the information delivery services and as part of the information access and exchange activities in the SATIS network.

It is precisely for these activities - "giving access to relevant information", "liberation of information" - that the scheme is intended. Therefore, the scheme is no end in itself to generate only neatly arranged bookshelves. As a tool for facilitating access to clear and essential technical information, it is adapted systematically to the day-to-day experiences of organisations involved in this field.

## 2. The hidden "concept"

The subject of this scheme may be described as "socially appropriate systems, techniques, technologies, resources and equipment for the production of relevant goods, services and ideas". Their products comprise everything which people need to function as human beings in a just and sustainable society: food, health, shelter, economic, environmental and social opportunities. We speak of "socially appropriate techniques and technologies" in the sense that they fit the human size and dimension in two ways: that they can be "appropriated" so that man controls his techniques, and that they fit into man's environment: they conserve natural resources and respect other people.

The classification has been designed and used by people working to appropriate technologies for popular development. In this field of work, as in any other, there are certain demonstrative features and fashions.



These include emphasis on the control and scale of production, the organic in agriculture, the people in "mankind", the renewable in energy, and so on. However, these features remain hidden in the classification itself. We trust that the users of this document are working on socially appropriate economic development, organic crop rotation, renewable energies, cooperative training, popular art and education, crafts in industry, and that they do not need to add these adjectives to their classification terms. We assume that this classification is not used by organisations working outside, or against, the goals given above.

Nevertheless, titles like 103 "appropriate technology", 118 "women and development", 215 "nuclear energy" and 404 "organic farming" do occur in the scheme. They are either meant to store/find documents which stress the necessity of socially appropriate techniques in a general way (103, 104), or cover new fields and accents of interest (118), or which stress the dangers of a not socially appropriate technique (215).

### 3. The external form

In the scheme there are no special places for things like tools, textbooks, maintenance guides, bibliographies, manufacturers catalogues, photo-copies, slides, films, descriptions of persons, addresses, sound tapes or video tapes, and journals.

Although the external appearance of some information may differ greatly, information on one specific subject is stored/found together in one place.

For convenience's sake in this introduction the term "document" is used for all kinds of information.

### 4. The second, revised edition

This classification is a revision and expansion of the 1979 edition and incorporates the experiences of many user-organisations with this scheme.

As such it reflects the development of activities and of opinions of the users during the past 4 years, and, on some points, a deliberate compromise between various widely different world views.

This experience has proven two things:

- a. that the basic approach and structure of the scheme is an effective information instrument
- b. that the more traditional schemes- which were extensively studied at the start of the first edition - were not adequate for the objectives and requirements of the organisations involved.

The second edition contains a number of improvements in the form of:

- new titles or new subjects (subjects until now under-represented)
- re-ordering of existing titles (including contraction of titles proven irrelevant)
- re-arrangement of the scope-notes
- clearer lay-out and type-work
- alphabetical index.

A classification evolves alongside developments in the work of its users. We suggest that you regularly inform the SATIS secretariat of:

- a. suggestions for additions, changes and eliminations.
- b. any adaptations you plan, or have made, for your internal use.

These will help the compilation of the third edition of this classification, scheduled provisionally for 1988.

#### 5. One scheme in two parts

The scheme is presented in two ways both containing exactly the same titles:

1. the list with titles, systematically arranged according to subject and preceded by a number: the classification.
2. the list with titles, alphabetically arranged and followed by a number: the index.

Although both lists can be used both for indexing documents ("classifying") and for retrieving documents ("searching"), you will make the most of their separate possibilities, if you use:

- a. the classification scheme for classifying documents: from studying the contents of a document and looking for relevant subjects where to "place" it. The classification has the advantage that it shows you a subject in its context, or directs you to other "places": it suggests a number of places to you from which you can choose the most relevant one(s).
- b. the index scheme for searching for documents: starting from the subjects you require information on, you "search" them in the alphabetical list whether there are documents present on the particular subject.

This works quickest. If the required information is not present, refer to the same subject in the classification scheme and check its "environment" for related subjects which might yield what you are looking for.

The more precise you formulate your question the quicker an index search works.

#### 6. Numbers: two schemes in one

User-organisations vary widely in the amount of information they possess on different subjects. And it is the amount of information to be stored, together with the degree of detail in the questions users ask, which defines the level of detail of your classification and index scheme. Of course this supply-demand relationship changes in time: the more information you offer, the more detailed questions will be asked by your users and vice versa (supposing there is no investment problem!).

This scheme offers two possibilities:

- a. all titles preceded (in the classification) or followed (in the index) by a three-digit number form a separate scheme, and can be used without further specification.
- b. all titles preceded or followed by a four or five digit number (that is, a three-digit number followed by one or two digits after a point (.)) form the second scheme, with a higher degree of detail.

Within the SATIS exchange network, members can use three and/or four and/or five digit numbers.

Also, for those subjects which don't have any priority among your documents and activities, the three-digit level can be used in combination with the four/five digit numbers for your priority subjects.

Even after the five-digit level, more detailed subdivisions can be made for your internal purposes. However, they are not accepted in exchange activities.

#### 7. Principles of subject division and arrangement

Each scheme like the present one is an exercise in dividing the world into separate parts and fitting them together, according to a certain point of view, into a new construction or scheme.

The point of view of the constructors of the present scheme (= its users) has been explained in paragraph 2. The world as they see it consists of human beings who strive for a human existence (call it "development") and need therefore:

- a. socially appropriate systems, techniques, equipment and resources for the production of
- b. relevant goods, services and ideas in
- c. a human environment.

The principles of division and arrangement of subject-groups derive directly from these three elements:

- techniques of production
- final end products
- environmental "aspects" (social, economic, political, cultural, etc.)

Each subject group contains one or more of these elements, or a combination of them.

In addition, in the composition of subject-groups such factors had to be taken into account as:

- very specific production processes
- relative size of the subject (volume of material).

Criteria not used for dividing/composition were - very deliberately - :

- scale of production (soap making contains small-scale ("hand production") as well as large scale ("industrial production"))
- production from used raw material.  
So, each title which describes a production technique, may contain information on recycling methods for that specific end-product.

And, again, the opinion and experiences of the present users (= constructors) of the scheme were decisive for answering such questions as whether production of (herbal) medicine should be in agriculture (4), health (8) or manufacture (6).

In the composition of subject-groups the element of the end-product has a clear priority. Where a thing is used, there also can be found its production, maintenance techniques. This is why:

- the production of cars is to be found/classified under transport (153.2)
- the construction of windmills is to be found/classified under energy (240-249)
- the construction of latrines is to be found/classified under sanitation (361.1)

Even the production of parts specific to the end-product can be found/classified there, unless they may serve the construction of several specific products (e.g. the production of screws (for cars, windmills and latrines) is in 673). In the same way agricultural techniques and equipment only specific to a certain crop are to be found/classified where the growing of that crop is mentioned (e.g. growing of potatoes: 441.23), while general agricultural techniques applicable for various crops are under a more general title (e.g. harrowing: 425.4).

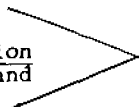
In these cases the actual user of the scheme has to decide on the question of "how specific is specific?" and anticipate requests for information. The same sort of judgement has to be made in those cases where something, which is an end-product of one production-phase (grain: 441.1) is at the same time raw material for the next processing phase (bread making: 531.13). Therefore, as a general rule you should use the most specific number which relates most directly to (use of) the end-product (in these cases: 441.23 for specific potato growing techniques and 531.13 for grain milling). The most specific number is not always the number with the highest figure of digits, as shows the case of dress sewing from used material (624) which is more specific than disposal and general recycling techniques of solid "waste" (363.2). Of course, according to your priorities and questions asked by the users, it might be useful in the grain milling example, in classifying documents on milling techniques for specific crops, to always add as a cross reference the number 528 (general milling techniques) in order to have in your file all information on milling in one place. But don't waste numbers!

## 8. General division into subject-groups

On the basis of the principles mentioned above and their application criteria the scheme contains roughly the following subject-groups, according to their importance in the eyes of the constructors:

- a. basic production techniques, resources, equipment and end-products for a number of basic needs: the technical "core" of the scheme's material:
  - energy placed in a main subject-group: 2
  - water placed in a main subject-group: 3
  - food placed in two main subject-groups: 4 and 5
  - housing placed in a main subject-group: 7
  - health placed in a main subject-group: 8

- b. subjects supporting these products and techniques:  
manufacture placed in a separate main subject-group: 6

settlement  
transport  
communication  
education and  
training  all placed within the main  
subject-group 1

- c. social, political, cultural, economic and  
environmental aspects of the society where this  
production takes place:  
1. directly relating to a specific production process  
or end-product, placed:  
a. under the generalities of the specific subject.  
b. as a separate title under the specific subject.  
2. as a separate group placed on its own in main subject  
group 1.

For instance:

- the economics of wind energy can be found/classified  
under 240 (wind energy - generalities)
- the economics of agriculture under 401 as a separate  
title within the specific subject
- agricultural, industrial and economic development  
are separate subject-groups within the main subject  
group 1
- training and education as a system and as a  
collection of methods for transfer of knowledge in  
a separate subject-group within the main subject-  
group 1
- training of medical personnel is a title within  
the specific subject health: 804
- training people in the construction/use of a solar  
device may be treated as an "aspect" and be placed  
under the generalities of solar energy: 230.

## 9. Scope-notes, generalities, numbers and empty numbers

### - Scope-notes

Subject-groups and titles are preceded by a short  
description of what the group/title contains.  
It indicates the "scope" of the group/title by  
mentioning, in the following sequence:

- what it contains
- what it also or for example includes (always preceded  
by a "-")
- how it relates to other groups/titles which  
are: a. narrowly related ("for ....: see ...").  
b. less related but relevant ("see also ...").

These two references are always in a different letter  
type.

- Number 0 - generalities

Generalities occur at the beginning of each subject-group, for which the "0" always has been reserved.

Generalities may include:

- very general works, not treating the subject of the group in detail
- works covering all or most of the subsequent subjects in detail (handbooks)
- one of the following aspects: legal, economic, social, cultural, scientific, educational or environmental.

In some cases these aspects have a separate number (because of their importance) e.g. agricultural economics: 401; health education: 804.

One should judge very carefully whether a document should be classified under a generality (no separate title being available) since it is a most unspecific number where the information is apt to disappear into the crowd.

Of course a document can be described more in detail by adding, in classifying, the more specific title-numbers as cross references.

- Number 9

..9 means Not Elsewhere Classified (N.E.C.) and occurs after each subject-group. Only as far as the three-digit level, not further "down". As the "0", the "9" is a reserved number.

The "9" (N.E.C.) is only designed as a temporary store for "new" specific subjects for which no title/number exists. In the third edition, the specific subject (if relevant), will be allocated a new number. In the first edition (1979), there was no separate number for recycling of agricultural (and food) waste. Many users classified their documents on this subject under 449 and 549. The subject has now been allocated a separate group 550-559.

Do not use the 9 code for documents you describe as "probably not relevant but we cannot throw it away". This sort of second-rate material does not belong in a library.

- Empty numbers: numbers without a title

They are also a result of the present revision and improvement, since a number of titles have been eliminated or contracted as not relevant (or even misleading).

Empty number may be used again in a next edition. For internal use organisations may use them, but they are not used within the SATIS network.

# macro - groups, groups and sub - groups

---

Macro-groups are the main subject-groups:

1. Man and society
2. Energy and Power
3. Water, Sanitation and Waste disposal
4. Agriculture, Forestry Works, and Aquaculture and Fisheries
5. Agricultural products processing and Food production
6. Manufacture, Engineering and Services
7. Building and Construction Works
8. Health

Groups are all the subject-groups within a macro-group headed by a title without a number: they are listed at the beginning of each macro-group.

Sub-groups are the subject-groups within a group with a three-digit number, or, where necessary, divided into a four or five-digit number.

## 1. Man and Society

Since it includes both the frequently occurring aspects as subject-groups on their own and a number of production supporting subjects, it is impossible to give one clear definition of this macro-group. The subjects are placed in one macro-group because of their relative small size (not little importance!).

The group includes subjects as: science, appropriate technology, economic development, trade, environment and natural resources, social services, housing programs, transport systems and vehicles, audio-visual material (and its production), mass-media, vocational training and teaching equipment.

These subjects include all systems and techniques; manufacture, use and maintenance of equipment which is specific to these subjects.

For equipment and techniques not specific to these subjects, see the other appropriate groups, especially 6. For relations with other (macro-)groups see the scope-notes of the groups within macro-group 1.



Running from "technology" through to "education" the subjects become progressively more technical.

The groups in this macro-group which contain the aspects are:

Technology

Development

Ecology, Environment and Resources

These subjects are more concerned with the production of ideas and services than with the production of goods.

The division criteria between these groups are of a pragmatic sort: they are relevant subjects.

In paragraphs 7 and 8 of the introduction and in the scope-notes of the (sub-)groups of this macro-group are the relationships explained and mentioned with other relevant macro-groups.

The groups in this macro-group which contain the more technical "production support" are:

Human Settlements

Transportation and Distribution

Communication and Information

Education

These subjects are concerned both with the production of ideas and services and of goods (public transport systems and buses).

Dividing/composing criteria between these groups: the nature of the end-product.

To illustrate the "production support" aspect, the place for documents on techniques for making slides are in 162.3; a slide show (or slide catalogue) on, for example, rabbits is in 455.1 (the number for rabbits).

## 2. Energy and Power

This macro-group covers techniques, manufacture, use and maintenance of equipment specific to energy production, power production and energy use. Energy production and its applications as far as they are directly related to the specific energy sources.

The macro-group includes: construction and use of biogas plants, firewood and stoves, solar cells, windmills, water-wheels, human power, electricity generation and supply, electrical applications.

Groups: Fossil Fuels  
Bio-mass Fuels  
Solar Energy  
Wind Energy  
Water and Marine Power  
Other Renewable Energy Sources and their  
Application  
Muscle Power  
Transformation, Distribution and Storage of  
Energy

The macro-group as a whole has been divided into groups according to energy source. Between the groups a division has been made according to a combination of elements:

- end-product: energy carrier (gas, solar collectors) and their production techniques
- use of the end-product (applications).

Relationships:

For equipment and techniques not specific to these subjects see the appropriate groups, especially 6.

For natural resources: see 121.

For extraction: see 610-619.

For energy use in agriculture: see 400.2.

For other information treating the energy "aspect" of a specific subject (e.g. industry, housing), the user should decide whether to use sub-group 200 or the generalities-group of the specific subject (600, 700).

The same applies for the pollution aspect of energy systems: 122 or one of the subjects of group 2 according to the energy or pollution accent of the information.

### 3. Water, Sanitation and Waste Disposal

The macro-group covers techniques and manufacture, use and maintenance of equipment specific to the collection, supply and storage of water, for liquid and solid waste disposal and treatment.

It includes: rainwater catchment, (construction of) pumps and pumping techniques, water tanks, filtration, sewage collection, latrines, waste recycling.

Groups: Surface Water  
Ground Water  
Water Lifting  
Water Supply  
Water Treatment  
Sanitation and Waste Disposal

The macro-group as a whole has been divided into groups according to water source (surface, ground) and water "production" (supply, lifting) techniques and equipment. Sanitation and waste disposal has been included because of its obvious relationship and size. Within the groups a division has been made according to "production" techniques and equipment.

Relationships:

For techniques and equipment not specific to these subjects see the other appropriate groups, especially 6.

For water pollution: see 122.1.

For health: see 8.

For use of waste for energy and for water lifting with specific source of energy (sun, wind): see 2.

For use of waste in agriculture: see 4.

For water and sanitation systems in human housing and water work construction: see 7.

General information on recycling is in 363.

For production of specific products from waste or used material by recycling techniques: see the group of that specific end-product.

4. Agriculture, Forestry Works, and Aquaculture and Fisheries

Macro-groups 4 and 5 together contain all food producing, processing and preparation activities.

Macro-group 4 contains all systems, techniques; manufacture, use and maintenance of equipment specific to agricultural crop production, animal husbandry (including fishery) and tree growing (forestry). Crop growing includes all operations up to and including winnowing, threshing and sorting. Further operations are in macro-group 5: crop processing into food and food preparation.

It includes: agricultural economics and transport, energy in agriculture, agricultural co-operatives, irrigation, (construction of) ploughs and ploughing techniques, growing of all crops; breeding, keeping and catching of all animals, all forestry and agroforestry operations, fish farming and use of fishing boats.

Groups: General Farm Equipment  
Soil Management  
Agricultural Techniques and Equipment per  
Operation  
Cultivation of Crops (per crop)  
Animal Husbandry  
Forestry Works  
Aquaculture and Fisheries

Note that Forestry Works, and Aquaculture and Fisheries are independent groups, and the generalities on these subjects are in 460 and 470, and not in 400.

The macro-group as a whole has been divided into groups according to general agricultural operations (soil management, forestry works, animal husbandry).

Within the groups divisions have been made according to:

- agricultural operations, applicable to several crops/  
animals

- specific end-products: crops, animals.

This means that pest control methods only specific to yams are to be found/classified in 441.22, while information on general pest control methods (applicable to several plants) is in 433.2.

Relationships:

For techniques and equipment not specific to these subjects: see the other appropriate groups, especially 6.

For processing of non-edible crops: see 6.

For energy: see 2.

For sewage and waste: see 3.

For agricultural waste: see 550.

For milling: see 5; milling of specific crops: 530-539, general milling techniques: 528.

For storage and packing: see 5; storage of specific agricultural products: 530-539, general storage techniques 540-549.

For general works on agro-industry: see 500.

For economic and agricultural development: see 1.

## 5. Agricultural Products Processing and Food Production

All systems, techniques, manufacture, use and maintenance of equipment specific to crop processing and food preparation, from the winnowing and threshing operations onwards.

Regardless of the production/processing phase this macro-group contains (both for agricultural produce and food products):

- milling techniques and (construction of) milling equipment:
  - a. general techniques: 528.
  - b. techniques for specific crops: 530-539 (per product).
- storage, packing and transport techniques and (construction of) storage/transport equipment:
  - a. general techniques: 540-549.
  - b. techniques for specific crops: 530-539 (per product).
- by-product and residue processing:
  - a. general techniques: 550-559.
  - b. techniques for specific crops: 530-539 (= waste processing of specific crops) and any other appropriate group defined by its end-product (e.g. agricultural waste for energy use, for animal feed, for board production, for composting).

It includes: world food situation, general works on agro-industry, nutritional values of food, cooking, recipes, food conservation, fermentation, processing, storage and conservation of all agricultural produce and food products, high protein food production, packaging and transport of all agricultural produce and food products, (use and construction of) silos, agricultural waste and food processing.

### Groups: Food Science

Food Technology and Food Preparation  
Food Processing per Product  
Packing, Storage and Transport of Agricultural Products and Food Products  
Agricultural By-product and Food Residue Processing

### Division:

The macro-group as a whole has been divided into groups according to main agricultural product and food processing techniques. Only 530-539 contains end-products including all operations per product.

Accordingly the division within groups has been made: 530-539 per product, all other groups are divided into sub-groups according to processing-operation.

Note: no difference has been made between "on-farm" and "off-farm" operations.

Relationships:

For techniques and equipment not specific to these subjects: see the other appropriate groups, especially 6.  
For energy and power: see 2.  
For general transport and pollution: see 1.  
For crop growing and use of waste in agriculture: see 4.  
For general waste disposal and recycling: see 3.

6. Manufacture, Engineering and Services

Since the whole scheme is, in one way or another, about "production" of goods, services and ideas, macro-group 6 contains all other forms of production not elsewhere classified, because they are

- on very specific products not sufficiently related to other macro-groups and too large in size (chemicals, paper and paper products).
- on the production of general products applicable and usable in various other production processes (mining of oil and coal for energy, which again is used in the production of electricity for a textile mill).

It contains all systems, techniques; manufacture, use and maintenance of equipment for the mentioned production forms, including recycling methods, assembly techniques, renovation, reconstruction, repair and service units, and the engineering knowledge.

The group has a tendency to relate mostly to industrial modes of production, although no difference is made between large/small scale or industrial/home!

The macro-group includes: business techniques, licences, trade-unions, (un)employment, tourism, mining and quarrying, textile production techniques and equipment (spinning, spinning wheels and clothing), leather production, saw mills and timber, wood drying, furniture, paper making and printing, chemical production, soap making, paints, chemical fertilisers, ceramics, chalk, iron and steel production, forging and blacksmithing, bolts and nuts, hand tools, watches and spectacles, electrical appliances and basic electronic equipment (computers).

As such it includes probably more tools and equipment for general purposes than any other macro-group.

Groups: Mining and Quarrying

Manufacture of Wearing Apparel and Leather

Manufacture of Wood, Wooden Products and

Furniture

Manufacture of Pulp, Paper and Paper Products

Manufacture of Chemicals and Chemical Products

Manufacture of non-metallic Mineral Products

Manufacture of Metal and Metal Products  
Manufacture of Electrical and Electronic  
Equipment

The generalities include all business techniques.

Division:

The macro-group as a whole has been divided into groups according to production of the end-product (business services under generalities; raw material production in mining and quarrying; electrical and electronic equipment) and processing of different raw material (in all other groups).

Within the groups a division has been made according to:

- a combination of production techniques and end-product (service) in the generalities, wearing apparel and leather production, woodworking industries, metal and metal products manufacture
- the production of specific end-products in all other groups.

Relationships:

For techniques and equipment specific to other subjects: see the appropriate groups.

For economic and industrial development, transport, general recycling and pollution: see 1.

For sewage and waste disposal: see 3.

For agricultural production of raw material: see 4.

For energy production: see 2.

For occupational accidents: see 8.

7. Building and Construction Works

All systems, techniques; manufacture, use and maintenance of equipment specific to buildings, roads, railways, earth and water-works.

Note: this macro-group does not contain the use of the constructed buildings and works.

It includes: surveying, contracting, building designs, houses, schools, hospitals, towers, earthquake proof buildings, mud bricks, burned bricks, (construction and use of) block presses, (ferro-)cement use and production, lime, bamboo, walls and masonry, chimneys, plumbing, house maintenance, road construction, bridges, railways, harbours, dike construction, runways and airports, earth moving equipment.

Groups: Building Design  
Construction Materials

Building Techniques and Elements  
Technical Services and Building Protection  
Construction Works

Division:

The macro-group as a whole has been divided into groups according to techniques (building designs) and production of end-products (all other groups, of which construction materials contain the production of a number of raw materials for subsequent building operations).

Within all groups a division has been made according to the production/construction of the end-product (different types of houses, roads, dikes, etc.)

Relationships:

For techniques and equipment not specific to these subjects: see the other appropriate groups, especially 6.

For specific (medical, educational, etc.) requirements and for use of the buildings: see the appropriate groups, e.g. water supply, transport and traffic, agriculture, health.

For energy (saving): see 2.

For extraction of raw materials not only specific to building and construction: see 610-619.

For spatial planning, settlement, housing policies and programs: see 1.

8. Health

All systems, techniques, manufacture, use and maintenance of equipment specific to the maintenance and promotion of personal and social health, and to the prevention and curing of all personal and social illnesses and injuries. The emphasis is rather on maintaining your health (prevention) than on curing your illnesses (therapeutics).

The macro-group includes: health policies and planning, public health (services), health education and training, health statistics, nutritional requirements of the body, toxicity, hygiene, vaccinations, accidents, treatment of illnesses and diseases, mental hygiene, birth control techniques, sexual life, mother and child care, child-birth, all bodies and methods of medical knowledge ("traditional", "western", allopathy, homeopathy, acupuncture, ayurvedics etc.), dentistry, production of medicines (herbal, chemical), narcotics, drugs, (construction and use of) medical equipment, records, beds, transport, laboratory equipment and techniques.



Groups: Nutrition

Social and Preventive Medicine, Hygiene  
Family Health  
Treatment Methods  
Production of Medicines  
Health Material and Equipment

The generalities contain health planning, training and education, health policies and statistics, economics, sociology and epidemiology.

Division:

The macro-group as a whole has been divided into groups according to:

- strategic areas for prevention of illnesses (nutrition, society, hygiene, family)
- curing techniques and production of healing substances (treatment methods, medicines)
- supporting health material and equipment (preventive and curative).

Within the groups a division has been made according to a combination of:

- techniques for maintaining healthy conditions (mother, child health; environmental health)
- curing techniques and production of healing substances for illnesses and accidents.

Note: no division has been made according to "physical" and "mental" health.

Relationships:

For techniques and equipment not specific to these subjects: see the other appropriate groups, especially 6.

For water supply and sanitation: see 3.

For nutritional values of food and food preparation: see 5.

For construction of buildings: see 7.

For social services and sociological description: see 1.

N.B.: The actual user of the scheme has to judge for a particular document, whether its contents belong as the "health aspect" to the generalities of that particular subject (e.g. 310: water supply) or to one of the groups of macro-group 8 (e.g. 820: generalities of social medicine and hygiene, or one of the groups of 823: infectious diseases; all depending on the bias, amount of detail and specificity of the document.

# 1

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## man and society

### TECHNOLOGY

- general development of science, research and technology; technology transfer; development of appropriate technology; technological co-operation

*for economic development and development co-operation: see 110-119*

*for specific appropriate technologies: see appropriate groups*

- 100 technology: generalities
- 101 science and research
  - polices; basic textbooks on fundamental science
  - for science and research on specific subjects: see appropriate groups*
- 102 transfer of technology
  - for development co-operation: see 111*
  - 102.1 legal aspects
    - patents and copy-rights policies
    - for manufacturing licences and patents: see 604*
  - 102.2 fiscal aspects
    - tax duties, tax incentives
    - for economic development: see 114*

103 appropriate technology  
- all general works on "a.t.", "traditional" technology, "village" technology, "indigenous" technology, "popular" technology, "intermediate" technology and "alternative" technology: concepts, philosophy; handbooks, manuals, directories, descriptions of a.t.-organisations  
*for appropriate technology for specific sectors: see appropriate group*  
*see also 111*

109 N.E.C.

#### DEVELOPMENT

macro-economics, economic development  
*for development per sector: see appropriate group*

110 development: generalities

111 development co-operation (policy papers)  
- development aid: financial assistance, technical assistance, policies for development aid; development banks; development education  
*for training of development workers: see 171.2*  
*for transfer of technology: see 102*

112 industrial development  
- general industrial policies  
*for policies on specific industries: see groups 5, 6 and 7*  
*see also 601*

113 rural and regional development  
- general integrated rural development policies  
*for policies on specific aspects of rural development: see groups 4, 5, 6 and 7*  
*see also 401*

114 economic development  
- national plans, 5-year plans, national accounts, national productivity, integrated economic development, development planning  
*for fiscal aspects of technology transfer: see 102.2*

115 trade and commerce  
- terms of trade; import and export; tariff barriers

116 organisation and project management  
- planning, identification, implementation and evaluation of projects and organisations  
*for specific office techniques and business techniques: see 601*

- 117 co-operatives  
- general works, e.g. on co-operative movements  
*for agricultural co-operatives: see 401.5*  
*for industrial co-operatives: see 601*  
*for agricultural credit and saving co-operatives: see 401.3*  
*for organisation and bookkeeping: see 601*
- 118 women and development  
- women organisations, general works
- 119 N.E.C.

#### ECOLOGY, ENVIRONMENT AND RESOURCES

- impact of human activities on the environment;  
general environmental aspects of other groups  
(e.g. industry and environment); the monitoring,  
protection and conservation of the environment  
*for sanitation, sewage and solid waste disposal: see*  
*360-369*  
*for recycling of specific materials: see appropriate groups*
- 120 ecology  
- ecodevelopment studies, environmental policies,  
geographics  
*for demography: see 131*
- 120.1 climate  
- climatology, meteorology, climatic  
changes, meteorological stations  
*for wind measurement devices: see 241.1*
- 121 natural resources  
general aspects  
- natural resource surveys (includes land survey  
techniques, aerial survey techniques and  
satellite survey techniques); photo-interpretation  
techniques; planning, management, conservation  
of natural resources  
*for specific mining techniques: see 610-616*  
*for surveying for construction works: see 700*
- 122 environmental protection and pollution
- 122.1 water pollution and control  
122.2 air pollution and control  
122.3 soil pollution and control  
122.4 noise control  
122.5 fauna and flora protection  
*for agroforestry: see 461*

- 123 deserts and desertification
  - arid zones
  - for erosion control techniques: see 422*
  - see also 423, 425.1*
- 124 disasters
  - floods, pests, earthquakes, fires, droughts
  - emergency aid
  - for pest control: see 433.2*
  - see also 711-713, 846*
- 129 N.E.C.

#### CULTURE AND SOCIETY

- specific cultural and social activities; social organisations
- 130 culture and society, general works
  - complete country information sets
- 131 demography
  - population programs, population data
  - for family planning: see 832*
  - for geographics: see 120*
- 132 sociology
  - sociological descriptions of societies
  - anthropology, ethnology
- 133 social organisations and communities
  - social structures, descriptions of groups (e.g. households); community development
- 134 social services
  - social welfare programs
  - for rehabilitation of disabled people: see 826*
- 135 culture
  - arts, languages, folklore, religion; sports, recreation, games, play-grounds, recreation parks
- 136 institutional framework
  - law, human rights, government, bureaucracy, politics, defence, disarmament
- 137 tourism
  - general works
  - for tourist services: see 607.3*
  - for buildings: see 711*
- 139 N.E.C.

## HUMAN SETTLEMENT

- spatial planning in relation to the environment
  - re-settlement, renewal programs, housing projects, housing regulations*for construction of buildings and technical services: see group 7*
- 140 human settlement: generalities
  - housing co-operatives; training programs, self-help housing, low income housing, co-operative housing
- 141 urban settlement and urban housing programs
  - urbanisation, squatters, slums and slum improvement, renewal programs
- 142 rural settlement
  - re-settlement programs, renewal programs
  - rural settlement programs
- 149 N.E.C.

## TRANSPORTATION AND DISTRIBUTION

- manufacture, use and maintenance of vehicles and transportation equipment, general storage and distribution systems
  - for construction of roads, railways, airports and water works: see 750-759*
  - for specific use of a device: see appropriate group*
  - for agricultural transport: see 412*
  - for food transport: see 543*
- 150 transportation and distribution: generalities
  - urban and rural transport systems, public transport systems (taxi, taxi brousse), traffic control (devices) for land transport, air transport and water transport (includes: navigational aids)
- 151 goods distribution systems
  - requirements, developments, general storage facilities, distribution of letters and parcels (mail)*for specific storage facilities: see appropriate groups*
- 152 material handling equipment
  - carrying, lifting
  - cranes, lifts, ropeways, cable ways, pulleys
  - hydraulic powered equipment

- 153 land transport devices
  - manufacture and maintenance of specific land transport devices; garages  
*for repair and maintenance units: see 607.1*
  - 153.1 carts, wheelbarrows
  - 153.2 pedal cycles, bicycles  
*for pedal power, general: see 271*
  - 153.3 motorcycles
  - 153.4 cars, buses, trucks
  - 153.5 tractors
  - 153.6 rail transport
    - trams, trains
  - 153.7 other land transport devices
- 154 water transport devices
  - fishing boats, ferrocement boats, sail boats, motor-powered boats, cargo-boats, inland water boats  
*for fishing techniques: see 471*
- 155 air transport devices
  - airships, aeroplanes, gliders, balloons, helicopters
- 159 N.E.C.

#### COMMUNICATION AND INFORMATION

- systems; techniques; manufacture, use and maintenance of equipment  
*for production of material and equipment not specific to communication and information: see group 6 (e.g. paper making, printing, ink making, electronic data processing)*  
*for catalogues: see appropriate group*
- 160 communication and information: generalities
- 161 communication and information systems
  - requirements, developments, system operation, general use and policies of communication programs, information exchange systems, networking
- 162 audio visual material and equipment
  - production, projection, equipment maintenance  
*see also 173*
  - 162.1 films (movies)
  - 162.2 sound tapes
  - 162.3 slides, photographs
  - 162.4 video
  - 162.5 posters, flannel graphs  
*for printing: see 643*

163 telecommunication and mass media  
- production, use, operation and maintenance  
*for distribution of mail: see 151*

163.1 telephone  
163.2 telex  
163.3 radio and radio communication  
- transmission sets, receiver sets  
163.4 television  
163.5 printed media  
- newspapers  
*for printing: see 643*

164 documentation and library  
systems, techniques and equipment

164.1 library organisation and management  
164.2 classifications  
- thesauri, indexes

169 N.E.C.

#### EDUCATION

systems; techniques; manufacture, use and  
maintenance of equipment  
*for training for specific activities and for textbooks  
on specific subjects: see appropriate group (e.g. for  
woodworking: see 630)  
see also 160-169*

170 education: generalities  
- urban education; rural education; access to  
education; school-leavers; teacher training;  
teacher retraining; education planning

171 educational systems and methodologies of teaching  
requirements; pre-school education and school  
education; primary education, secondary education  
and higher education; special educational programs;  
special training programs, vocational training  
- youth clubs, workshops, conferences

171.1 (adult) literacy education  
171.2 training of development workers  
171.3 special education  
- handicapped education, retarded education  
remedial teaching

172 --



- 173 teaching material and equipment  
*for games: see 135*  
*for educational building construction: see 711.4*  
*for chalk making: see 664*  
*for school furniture: see 634*  
*for audio-visual teaching material: see 162*
- 179 N.E.C.

# 2

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## energy and power

- . 200 energy and power: generalities
  - information on energy per country, per region, general data and measurements, energy conservation, "alternative" energy, (household) energy consumption, energy production and policy documents
  - for natural resources: see 121*
- 200.1 energy saving
  - energy conservation, waste energy use

### FOSSIL FUELS

- use of fossil fuels in energy production
  - for extraction of fossil fuels: see 610-619*
- 210 fossil fuels: generalities
- 211 oil and petrol
  - shale processing
  - for manufacture of oil and petrol products: see 657*
- 212 coal and coke
  - carbonisation (e.g. fluidized bed combustion)
  - for carbonisation of bio-mass: see 225.2*
  - see also 281.1*

- 213 natural gas  
*for installation: see 741.2*
- 214 peat
- 215 nuclear energy  
- nuclear energy discussions and general alternatives
- 216 other fossil fuels
- 219 N.E.C.

#### BIO-MASS FUELS

- production and use of bio-mass fuels for energy  
production and applications  
- electricity production  
*for construction of stoves: see 281.1*  
*see also 360-369, 550*
- 220 bio-mass fuels: generalities  
- photosynthesis
- 221 biogas  
methane, gobar gas  
- biogas from agricultural wastes and food wastes  
*see also 450-459*
  - 221.1 science and research on biogas
  - 221.2 biogas plants (small and big)  
construction, operation and maintenance
  - 221.3 biogas applications and equipment  
- biogas for electricity  
*see also 282, 743*
- 222 wood gas, producer gas  
- gasification, gas generation
  - 222.1 gas fuels from wood
  - 222.2 gas fuels from other vegetable material
  - 222.3 pyrolysis
- 223 hydrogen  
- biophotolyse
- 224 alcohol and other liquid fuels  
*see also 652*
  - 224.1 alcohol from wood
  - 224.2 alcohol from other bio-mass
  - 224.3 liquid fuels from plants  
- vegetable oil for diesel engines and other bio-mass fuels

- 225 charcoal and wood
  - charcoal making
  - 225.1 wood
    - firewood
    - for stoves and ovens: see 281.1*
  - 225.2 charcoal, carbonisation of bio-mass
    - applications, charcoal making, activated charcoal
- 226 solid fuels from agricultural wastes and other organic materials
  - pellets, eco-bricks, briquets
  - see also 550*
- 229 N.E.C.

#### SOLAR ENERGY

- collection and applications of solar energy
  - electricity production
- 230 solar energy: generalities
  - radiation data and measurements, solar energy per country, science and research
  - for solar buildings: see 712*
- 231 collection of solar energy
  - 231.1 low temperature solar collectors
    - solar ponds, flat plate solar collectors
    - for storage of solar energy: see 281.2*
  - 231.2 high temperature solar collectors
    - concentrators
    - for specific applications (e.g. sugar production): see appropriate groups*
  - 231.3 solar cells
    - photo voltaic collection, thermo ionic collection
  - 231.4 greenhouses (hothouses)
    - only for energy purposes
    - for design and construction of agricultural greenhouses: see 711.2*
    - for agricultural use: see 432.5*
- 232 solar heating
  - see also 744*
  - 232.1 solar water heating
  - 232.2 solar air heating (home heating)

- 233 solar cooling
  - solar refrigeration
  - see also 525, 744*
- 234 solar cooking
  - solar cookers, solar autoclaves
  - for other cookers, stoves and ovens: see 281.1*
  - for cooking recipes: see 521*
- 235 solar water distillation and desalination
  - solar stills, saline water conversion, solar salt production
  - for other desalination techniques: see 355*
- 236 solar powered water pumping
  - photo voltaic pumps, solar thermo-dynamic pumps
- 237 solar drying
  - drying of agricultural products, food, wood and chemicals
  - see also 524, 632, 651*
- 238 solar powered heat engines
  - electricity production and other mechanical applications
  - for heat engines: see 283.2*
  - see also 282, 744*
- 239 N.E.C.

#### WIND ENERGY

- collection and applications of wind energy
  - electricity production
- 240 wind energy: generalities
  - wind energy research
- 241 wind data
  - wind velocity data, anemometrics, registration equipment, site selection
  - for meteorology: see 120.1*
  - 241.1 wind measurement devices
  - 241.2 wind data per country, per region
  - 241.3 safety devices (general)

- 242 slow running wind turbines
  - 242.1 horizontal axis
    - aeromotor, cretan windmill, dutch windmill, sail windmill
  - 242.2 vertical axis
    - savonius rotor, wind spinner, chinese windmill
- 243 fast running wind turbines
  - 243.1 horizontal axis
    - air screws
  - 243.2 vertical axis
    - darrieus turbine, cyclo turbine, giro-mill
- 244 wind generators  
for electricity
- 245 windpumps  
for water pumping  
*for solar water pumping: see 236*  
*for other water pumping: see 330-339*
- 246 windmills and other direct mechanical applications  
of wind energy
  - grain milling, saw-mills
- 247 wind energy for heating and cooling  
*see also 744*
- 249 N.E.C.

#### WATER AND MARINE POWER

- collection and application of water and marine power
- 250 water and marine power: generalities
- 251 water data and measurements
  - measurement equipment and registration devices, information per country, per region
  - for hydrology: see 300*
- 252 water wheels  
overshot and undershot
- 253 water turbines
  - floating turbines and stream turbines

- 254 hydro-electricity
  - micro-hydro plants, hydro-electricity plants
- 255 watermills and other hydraulic energy systems
  - for hydraulic rams: see 336*
- 256 sea power
  - 256.1 wave power
  - 256.2 tidal power
  - 256.3 ocean current power
  - 256.4 ocean thermal energy conversion
- 259 N.E.C.

#### OTHER RENEWABLE ENERGY SOURCES AND THEIR APPLICATIONS

- 260 other renewable energy sources and their applications: generalities
- 261 geothermal energy
  - see also 121*
- 262 fission energy
- 269 N.E.C.

#### MUSCLE POWER

- general techniques and systems
  - for applications: see appropriate groups (e.g. 330-339 for water lifting)*
  - see also 153*
- 270 muscle power: generalities
  - ergonomics
- 271 human power
  - pedal power
  - for bicycles: see 153.2*
- 272 animal power: generalities
  - see also 412.1, 451*
- 279 N.E.C

## TRANSFORMATION, DISTRIBUTION AND STORAGE OF ENERGY

- not specific to source of energy (*for which see: 220-229*)
- 280 transformation, distribution and storage of energy: generalities
  - thermo dynamics; electro-chemical generators
  - for fluidized bed combustion: see 212*
- 281 heat and heating devices
  - 281.1 stoves and ovens construction
    - mud stoves, wood stoves and metal stoves
    - for solar cookers: see 234*
    - for lime kilns, brick kilns, pottery kilns and charcoal kilns: see appropriate groups*
  - 281.2 storage of heat
  - 281.3 transport of heat
    - heat pipes, heat exchangers
  - 281.4 thermal insulation
    - for insulation in buildings: see 744*
  - 281.5 heat pumps
- 282 electricity
  - rural electrification programs
  - for specific energy sources for electricity: see 210-219, 220-229, 238, 244, 254*
  - for manufacture of electrical appliances and for electronics, see 680-689*
  - 282.1 electricity generation
    - dynamos, generators
  - 282.2 distribution and supply of electricity networks
    - for electrical installations in buildings: see 743*
  - 282.3 --
  - 282.4 --
  - 282.5 storage of electricity
    - dry batteries, accumulators
- 283 mechanical energy
  - 283.1 internal combustion engines
    - Otto engines, diesel engines, Wankel engines
  - 283.2 external combustion engines
    - heat engines (e.g. steam engines, Stirling engines)
  - 283.3 transmission equipment
    - belts, gear boxes, chains, hydraulics
  - 283.4 storage of mechanical energy



- 284    cooling and refrigeration devices  
      *for solar cooling: see 233*  
      *for cooling and refrigeration of food: see 525*  
      *for cooling of houses: see 744*  
      *for wind powered cooling: see 247*  
      *for cooling of vaccines: see 822*
- 289    N.E.C.

# 3

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## water, sanitation and waste disposal

- 300 water, sanitation and waste disposal:  
generalities  
- hydrology, water resource planning,  
water engineering, fluid mechanics  
*for natural resources: see 121*  
*see also 251, 756*

### SURFACE WATER

- collection, control; manufacture, use and  
maintenance of equipment, data and measurements  
*for storage: see 344*
- 310 surface water: generalities  
- watershed management, evaporation control  
*for erosion control: see 422*
- 311 rainwater catchment
- 312 streams, rivers, canals and other hydraulic  
structures  
dams and spillways: requirements and systems,  
aquifers  
*for construction: see 756*  
*for irrigation: see 423*

313 lakes and ponds  
*for fishfarming ponds: see 472.1*

319 N.E.C.

#### GROUNDWATER

extraction; control; manufacture, use and  
maintenance of equipment; operation techniques;  
data and measurements

*for water pumping and lifting: see 330-339*

*for storage: see 344*

320 groundwater: generalities  
water searching techniques, planning, management,  
control, protection  
*see also 121, 251*

321 wells  
deep wells and shallow wells, tubewells, digging,  
boring, maintenance  
- well drilling equipment, casings, linings

322 springs and fountains  
protection, maintenance

329 N.E.C.

#### WATER LIFTING

techniques, manufacture, use and maintenance of  
equipment for deep and shallow wells

- water powered pumps

*for solar powered water pumping: see 236*

*for wind pumps: see 245*

330 water lifting: generalities  
general water lifting equipment for deep and shallow  
wells  
- suction pumps, rotary pumps

331 --

332 hand pumps  
- pitcher pumps, simple force pumps, piston pumps

333 pedal powered pumps

334 animal powered pumps

335 engine powered pumps  
- steam powered pumps, combustion powered pumps,  
electricity powered pumps

- 336 hydraulic rams and other water powered pumps  
- floating water pumps  
*for water power: see 250-259*
- 337 other water lifting devices  
- Archimedean screws, Humphrey pumps, bucket  
chains, shadoof, rope pumps
- 338 heat powered pumps  
*for solar applications of heat powered pumps: see 236*  
*for heat engines: see 283.2*  
*for heat pumps: see 744, 281.5*
- 339 N.E.C.

#### WATER SUPPLY

- systems; techniques; manufacture, use and  
maintenance of equipment for water distribution;  
from the collection point to the consumption point
- 340 water supply: generalities
- 341 water supply systems  
planning, design, descriptions of different  
systems such as urban, rural
- 342 pipes and tubes  
systems, design, construction, maintenance,  
all parts (e.g. taps), water flow measurement  
devices, public standposts  
*for installation: see 741*
- 343 aqueducts and other water transport equipment  
*for canals: see 312*  
*for construction: see 756*  
*for aquifers: see 312*
- 344 water storage equipment  
for ground- and surface water  
- tanks, reservoirs, cisterns, design, construction,  
seepage control, maintenance  
*for lakes and ponds: see 313*
- 349 N.E.C.

## WATER TREATMENT

- systems; techniques; manufacture, use and maintenance of equipment for water (quality) measurement, control and treatment
  - water purification, drinking water production
- 350 water treatment: generalities
- 351 water testing
- 352 chemical water treatment
  - fluoridation, chlorination, water softening, water de-chlorination
- 353 biological water treatment and physical water treatment
  - distillation, sedimentation, filtration, boiling, riverbank filtration, slow-sand filtration
  - for solar water distillation: see 235*
  - for waste water treatment: see 361*
  - 353.1 slow-sand filtration
  - 353.2 biological water treatment
  - 353.3 physical water treatment
- 354 --
- 355 desalination
  - saline water conversion; also by electro dialysis techniques
  - for solar desalination and solar stills: see 235*
- 359 N.E.C.

## SANITATION AND WASTE DISPOSAL

- systems; techniques; manufacture, use and maintenance of equipment
  - human and animal waste, home waste disposal and treatment, industrial waste disposal and treatment, agricultural waste disposal and treatment
  - for general water pollution: see 122.1*
  - for energy use: see 220-229*
  - for health and hygiene: see group 8*
- 360 sanitation and waste disposal: generalities
  - sanitary engineering

- 361 sewage collection, disposal and treatment  
- human and animal waste, nightsoil, sewerage  
systems, sewage works  
*see also 220-229, 741*
- 361.1 latrines  
361.2 septic tank  
361.3 sewage treatment  
- sewage farms; photosynthetic  
reclamation through algae  
*for special treatment techniques: see 350-359*
- 362 --
- 363 solid waste collection, disposal and treatment  
- incineration, separation, recycling  
*for composting in agriculture: see 424.1*  
*for agricultural by-products and food residue processing:*  
*see 550*  
*see also 220-229, 741*
- 363.1 solid waste collection and disposal  
363.2 solid waste treatment  
- solid waste recycling  
*for recycling of specific material for specific*  
*products: see appropriate group*
- 369 N.E.C.

# 4

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## agriculture, forestry works and aquaculture and fisheries

- 400 agriculture: generalities
  - agricultural sciences: agronomy, horticulture
  - for generalities on forestry: see 460*
  - for generalities on fisheries: see 470*
  - for agricultural waste disposal and treatment: see 360-369*
- 400.1 agricultural science and research
  - general works
  - for research on specific subjects: see appropriate groups*
- 400.2 energy in agriculture
- 401 agricultural economics
  - see also 113*
  - 401.1 agricultural development
    - policies, programs
  - 401.2 farm management
    - for specific office equipment and business equipment: see 601*
  - 401.3 credit and financing
    - credit unions for agricultural activities
    - for generalities on credit and financing: see 110-119*
    - see also 602*

*continued*

- 401.4 marketing and commercialisation  
 general agricultural marketing techniques,  
 marketing of unprocessed agricultural  
 products  
 - marketing cooperatives  
*for marketing of specific agricultural products:  
 see appropriate group*
- 401.5 agricultural cooperatives  
 general organisation and functioning of  
 agricultural cooperatives  
 - production cooperatives  
*for cooperative movements: see 117  
 for business techniques for cooperatives: see 601*
- 402 social and institutional aspects  
 - land tenure (systems), agrarian reform, farm  
 size, farm holding structures (family farms,  
 home steads), agricultural labour
- 403 agricultural training programs  
 - extension programs and services  
*see also 170-179, 603*
- 404 organic farming (conservation farming)  
 general works  
*for organic agricultural methods for specific crops: see  
 appropriate groups  
 for composting: see 424.1*
- 405 hydroponics and nutri-culture
- 406 agricultural production systems (farming systems)  
 as characterised by its climatological,  
 geographical and socio-economic requirements  
 - comprehensive descriptions of agricultural  
 production systems, wetland farming, dry land  
 farming
- 407 crop-rotation  
 - inter cropping, multiple cropping  
*see also 420-429*
- 409 N.E.C.

#### GENERAL FARM EQUIPMENT

not specific to any agricultural operation or crop  
 (e.g. *for specific rice cultivation equipment: see 441.11*)  
 - use and production of equipment, agricultural  
 engineering  
*for workshop tools and equipment: see 673  
 for agricultural building construction techniques: see 711.2*



- 410 general farm equipment: generalities  
farm mechanisation, agricultural engineering
- 411 --
- 412 agricultural transportation and traction  
- trailers  
*for general transport: see 150-159*  
*for specific food transport: see 543*  
*for transmission equipment: see 283.3*  
*see also 270-279*
  - 412.1 animal traction  
*for animal power, general: see 272*  
*see also 451-459*
  - 412.2 motorized traction  
*for manufacture: see 153*
  - 412.3 transportation and traction  
equipment
- 419 N.E.C.

#### SOIL MANAGEMENT

- general systems; general techniques; equipment for  
preparation and cultivation of the soil, use and  
production  
*for techniques and equipment for specific crops: see*  
*430-439*  
*for surveying: see 700*
- 420 soil management: generalities  
- soil salinity treatment, soil disinfection, soil  
disease treatment
  - 420.1 dry farming/ dryland farming
- 421 soil science  
- soil classification, soil analysis, tests  
sampling, methods and equipment
- 422 terracing and erosion control  
techniques and equipment  
*see also 123*
- 423 irrigation and drainage  
*for water transport: see group 3*  
*for shading: see 433.4*  
*see also 123, 124*

*continued*

- 423.1 drainage and land reclamation
  - ditches
- 423.2 irrigation
  - general handbooks, theoretical works, equipment
- 424 fertilisation
  - application techniques, equipment
  - science and research
  - 424.1 organic and biological fertilising
    - composting
    - for organic farming: see 404*
    - see also 361, 550*
  - 424.2 other fertilisers
    - nitrogen, lime, chemicals
    - for production of chemical fertilisers: see 656.2*
  - 424.3 green manure
  - 424.4 nitrogen fixation
- 425 mechanical soil treatment and equipment
  - use and production of specific equipment
  - 425.1 landclearing
    - levelling
  - 425.2 hoeing
  - 425.3 ploughing
    - contour ploughing, ploughs
  - 425.4 harrowing (clod crushing)
    - harrows
- 426 mulching
- 429 N.E.C.

#### AGRICULTURAL TECHNIQUES AND EQUIPMENT PER OPERATION

all general growing techniques; production, use and maintenance of equipment for specific agricultural operations

- buildings specific to these operations
- for energy use of agricultural waste: see 220-229*
- for agricultural by-product processing: see 550*
- for specific cultivation techniques and equipment per crop: see 440-449*
- for milling, grinding, crushing, pulping, decorticating: see 528 (general), 530-539 (per crop)*
- for storage and packaging: see 530-539 and 540-549 (general)*
- for agricultural transportation: see 412*

- 430 agricultural techniques and equipment per operation: generalities
  - plant sciences, botany
- 431 seeding and seed treatment
  - seed protection, improvement and storage, seed production, nurseries
- 432 plant cultivation
  - 432.1 plant improvement
    - genetics and selection, conservation of varieties, gene banks, seed exchange, *for specific crops: see 440-449*  
*for agricultural science and research: see 400.1*
  - 432.2 planting and transplanting
  - 432.3 pruning
  - 432.4 grafting
  - 432.5 agricultural use of greenhouses
    - for greenhouses for energy use: see 231.4*
    - for construction of greenhouses: see 711.2*
- 433 plant protection
  - biological control, chemical control, integrated control  
*for specific crops: see 440-449*
  - 433.1 plant diseases and treatment  
*for production of chemical pesticides: see 656.1*
  - 433.11 deficiency and excess diseases and treatment
  - 433.12 viral diseases and treatment
  - 433.13 bacteriological diseases and treatment
  - 433.14 fungus diseases and treatment
  - 433.2 pest control  
*for production of chemical pesticides: see 656.1*  
*see also 404, 462, 542.3*
  - 433.21 insects
  - 433.22 rodents
  - 433.23 birds
  - 433.24 bats
  - 433.3 weed control
  - 433.4 climatic factors and protection
    - shading, hail storm protection
- 434 harvesting and on-farm harvesting operations  
*for milling, grinding, crushing and decorticating: see 528 (general) and 530-539 (per crop)*  
*for solar drying: see 237*  
*for other drying: see 524*  
*for storage and packaging, see 540-549*

- 435 threshing
- 436 winnowing
- 437 sorting
- 439 N.E.C.

CULTIVATION OF CROPS (PER CROP)

as far as specific to the following crops:  
 all growing techniques; production, use and  
 maintenance of equipment (including buildings) for  
 all cultivation and harvesting operations  
*for general agricultural techniques and equipment: see 430-439*  
*for storage and packaging: see 530-539, 540-549 (general)*  
*for solar drying: see 237*  
*for other drying: see 524*  
*for milling and shelling: see 528 (general) and 530-539*  
*for medicinal plants: see 852*

- 440 cultivation of crops: generalities
- 441 amylaceous crops
  - 441.1 cereals
    - 441.11 rice (also paddy) (*Oryza sativa* and  
*Oryza glaberrima*)
      - pluvial and illuvial rice
    - 441.12 maize or corn (*Zea mais*)
    - 441.13 wheat (*Triticum* spp.)
      - all kinds of wheat
    - 441.14 sorghum (*Sorghum* spp.)
    - 441.15 millets
      - all kinds of millet: italian millet  
(*Setaria italica*), common millet  
(*Panicum miliaceum*), eleusine or caracan  
or ragi, finger millet (*Eleusine  
caracana*)
    - 441.16 barley (*Hordeum vulgare*)
  - 441.2 starchy products (root crops)
    - sago
  - 441.21 cassava (*Manihot* spp.)
    - cassava as a vegetable
  - 441.22 yams (*Discorea* spp.)
  - 441.23 potatoes
  - 441.24 sweet potatoes

- 442 fodder and pasture
  - 442.1 pasture
  - 442.2 fodder graminae
  - 442.3 fodder leguminous
    - clovers
  - 442.4 cactus
  - 442.5 fodder beet
- 443 textile and fibre plants
  - 433.1 cotton (*Gossypium* spp.)
  - 433.2 sisal or fibre agave (*Agave* spp.)
  - 433.3 jute (*Corchorus* spp.)
  - 433.4 kenaf or rama or dekkan hemp
    - (*Hibiscus cannabinus*)
  - 433.5 ramie or china grass (*Boehmeria* spp.)
  - 433.6 hemp (*Cannabis sativa*)
  - 433.7 kapok or silk cotton tree (*Cuba* spp. and *Bombax* spp.)
- 444 sugar producing plants and stimulants
  - 444.1 sugar producing plants
    - 444.11 sugar cane
    - 444.12 sugar beet
  - 444.2 stimulants
    - 444.21 cocoa
    - 444.22 coffee
    - 444.23 tobacco
    - 444.24 tea
- 445 insecticidal plants, aromatic plants, tan and dye plants, perfume plants
 

*for medicinal plants: see 852*

  - 445.1 insecticidal plants
    - 445.11 pyrethrum
  - 445.2 aromatic plants
    - 445.21 vanilla (*Vanilla* spp.)
    - 445.22 cinnamon and cassia (*Cinnamomum* spp.)
    - 445.23 pepper plant (*Piper nigrum*)
    - 445.24 ginger (*Zinginer officinale*)
  - 445.3 tan and dye plants
  - 445.4 perfume plants

- 446 rubber plants, resin plants, wax plants
  - 446.1 rubber plants
    - 446.11 hevea
  - 446.2 resin and wax plants
- 447 fruits, nuts and oil producing plants
  - 447.1 fruits
    - 447.11 citrus plants
    - 447.12 pineapples or ananas
    - 447.13 avocados
    - 447.14 bananas
    - 447.15 mangoes
    - 447.16 papaw or papayas
    - 447.17 date-palm
    - 447.18 pirus tree
      - apples and pears
    - 447.19 prunus tree
      - almonds, apricots, cherries, plums, peaches, capuli
  - 447.2 nuts and oil producing plants
    - 447.21 oil palm
    - 447.22 coconuts
      - also for coir
    - 447.23 groundnuts or peanuts
    - 447.24 castor beans
    - 447.25 sunflowers
- 448 garden vegetables, legumes and ornamentals
  - 448.1 garden vegetables
    - 448.11 legumes
      - soyabeans
      - beans
    - 448.12 cruciferous
      - cabbages, turnips, radish, watercress
    - 448.13 solanaceous
      - tomatoes, sweet and red pepper, chili, eggplants or aubergines
    - 448.14 allium
      - garlic, chives, shallots, onions, leeks
    - 448.15 cucurbitaceous
      - chayotte, cucumbers, gherkins, zucchini or courgette, gourds or squash or marrows, pumpkins, melons

*continued*

- 448.16 umbelliferous
  - carrots, celery, sweet fennel, parsley, chervil, angelica
- 448.17 mushrooms
- 448.18 compositae or asteracea
  - lettuce, endives, chicory, artichoke, dandelion
- 448.2 ornamentals
- 448.21 annual or biannual plants
- 448.22 perennial plants
- 448.23 ornamental trees

449 N.E.C.

#### ANIMAL HUSBANDRY

all breeding and keeping techniques; manufacture, use and maintenance of equipment for general animal husbandry techniques and for each specific animal or group of animals

- housing, feeding, disease treatment

*for energy use of animal waste: see 220-229*

*for composting: see 424.1*

*for further food processing: see group 5*

*for hide and fur processing: see 626*

*for general agricultural techniques and equipment: see 430-439*

*for animal power: see 272*

*for animal traction in agriculture: see 412.1*

- 450 animal husbandry: generalities
  - animal husbandry techniques not specific to any animal
    - fences and cages
- for construction of buildings: see 711.2*

- 450.1 animal feeding
  - cattle watering, silage techniques, haymaking
- for food waste for animal food: see 550*
- for fodder and pasture crops: see 442*
- 450.2 veterinary sciences and services
  - general diseases
- for production of pharmaceuticals: see 851*

451 horsekind or equines

- 451.1 horses
- 451.2 donkeys
- 451.3 mules

- 452 cattle
  - yak, banteng, gayal
- 452.1 taurines
  - dairy, beef and draft oxen
- 452.2 zebus
- 452.3 buffaloes
- 453 goats, sheep and camels
  - 453.1 goats
  - 453.2 sheep
  - 453.3 camels and dromedaries
  - 453.4 llamas, alpacas, vicunas
  - 453.5 antilopes
- 454 pigs, swines and hogs
- 455 rabbits and guinea pigs
  - fur bearing animals
- 455.1 rabbits
- 455.2 guinea pigs
- 455.3 chinchillas
- 455.4 musquashes
- 455.5 minks
- 456 poultry and other birds
  - broilers and layers
- 456.1 chickens
- 456.2 turkeys
- 456.3 ducks
- 456.4 geese
- 456.5 quails
- 456.6 pheasants
- 456.7 guinea-fowl
- 456.8 game birds
- 457 beekeeping and honey extraction
  - beehive construction
- 458 other animals
  - 458.1 silkworms
  - 458.2 reptiles
    - turtles, alligators, crocodiles, snakes
  - 458.3 frogs
  - 458.4 snails
  - 458.5 pets
  - 458.6 game
  - 458.7 wild animals



459 N.E.C.

## FORESTRY WORKS

all growing and production techniques;  
manufacture, use and maintenance of equipment for  
general forestry works and for the cultivation  
of specific trees.

*for processing of forestry products: see 630-639 and  
640-649*

*for energy use: see 220-229 and 281.1*

*for wood as construction material: see 725*

*for charcoal making: see 225.2*

*for solid fuels from forestry waste: see 226*

460 forestry works: generalities  
- planning, administration, management, training,  
reafforestation

*for desertification: see 123*

*for landclearing: see 425.1*

*for erosion control: see 422*

461 agroforestry

462 cultivation and conservation

- nurseries, pest control, fire control

*see also 431, 432*

463 forestry works

general work

- sampling, felling, transportation, cutting,  
logging, sawing

*see also 225*

463.1 silvicultural methods

463.2 forest resource inventory and forest  
measurement methods

463.3 plantation and fertilisation

463.4 land clearing, thinning and pruning,  
coppice crafts

463.5 cutting, regeneration cutting

463.6 hauling and transport

463.7 resin collection and other operations

464 cultivation of specific trees

464.1 eucalyptus

464.2 leguminous trees, super trees

464.3 other deciduous trees

464.4 pines

464.5 other coniferous trees

464.6 bamboos

469 N.E.C.

#### AQUACULTURE AND FISHERIES

all breeding techniques; manufacture, use and maintenance of equipment for general fishing techniques and for the cultivation of specific fish species

*for processing of fish and fish products: see 536.4  
see also 550*

470 aquaculture and fisheries: generalities  
- planning, management, administration, training

471 fishing  
techniques and equipment (fishing gear) for salt and fresh water fish catching  
*for construction of fishing boats: see 154*

472 fish farming  
feeding, hatching, cultivation, ponds  
- herbivorous fish (grasscarps)  
*see also 313*

- 472.1 pond construction and maintenance
- 472.2 feeding (general works)
- 472.3 hatching and cultivation (general works)
- 472.4 farming of specific species of freshwater fish
- 472.5 farming of specific species of saltwater fish
- 472.6 farming of specific species of crustaceans  
- crayfish, shrimps, lobsters, crabs
- 472.7 farming of specific species of mollusks  
- clams, oysters, mussels

473 water plants  
cultivation, exploitation, techniques and equipment

- 473.1 eelgrasses
- 473.2 algae
- 473.3 azolla
- 473.4 water hyacinth
- 473.5 aquatic weeds

479 N.E.C.

# 5

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## agricultural products processing and food production

- 500 agricultural products processing and food  
production: generalities  
- reports on the world food situation; reports  
per country and region; general work on  
agro-industry; economic aspects; marketing  
*see also 401, 601, 530-539*

### FOOD SCIENCE

- nutritional values, composition of foods, food  
additives, food chemistry and sciences, biology  
*for nutritional requirements of the human body: see 810-819*
- 510 food science: generalities
- 519 N.E.C.

### FOOD TECHNOLOGY AND FOOD PREPARATION

- general techniques and equipment per operation  
- conservation, preservation and processing;  
food use and production  
*for processing techniques and equipment for specific food  
products: see 530-539*  
*for general storage and packaging techniques: see 540-549*
- 520 food technology and food preparation: generalities

- 521 cooking
  - kitchen utensils, cookbooks, general recipes
  - for solar cooking: see 234*
  - for stoves and ovens: see 281.1*
- 522 baking
  - bakeries
  - for ovens: see 281.1*
  - for flour production: see 531*
- 523 curing
  - brining, salting, pickling, smoking, roasting
- 524 dehydration and concentration
  - for solar drying: see 237*
- 525 refrigeration, freezing and freeze-drying
  - (cool storage), lyophilization; general works
  - for solar cooling: see 233*
  - for cooling with wind energy: see 247*
  - for refrigeration devices: see 284*
- 526 distillation, sterilisation, pasteurisation and fermentation
  - 526.1 distillation
  - 526.2 sterilisation and pasteurisation
  - 526.3 fermentation
    - for fermentation for beverages: see 535*
- 527 canning, bottling and vacuum techniques
  - vacuum sealing in plastics, home and commercial canneries
- 528 milling, crushing, decorticating and pressing
  - 528.1 milling, grinding (general)
  - 528.2 crushing
  - 528.3 pulping, decorticating, shelling
- 529 N.E.C.

#### FOOD PROCESSING PER PRODUCT

techniques and equipment; food use and production;  
 all operations per specific product  
 - milling and shelling; storage and packaging;  
 marketing  
*for general milling and shelling techniques: see 528*  
*for general storage and packaging techniques: see 540-549*  
*for general food marketing techniques: see 500*

- 530 food processing per product: generalities
  - general economic aspects; quality control
- 531 processing of cereals and starchy products
  - flour and yeast production
  - 531.1 processing of cereals
    - 531.11 processing of rice
    - 531.12 processing of maize or corn
    - 531.13 processing of wheat
  - 531.2 processing of starchy products
    - 531.21 processing of cassava
    - 531.22 processing of potatoes
- 532 fruit and vegetable processing
  - 532.1 fruits
    - peanuts and coconuts
  - 532.2 vegetables
    - soya
- 533 vegetable fat processing and oil production
 

*for perfume essences: see 653.3*

  - 533.1 oil presses
  - 533.2 palm oil
    - for palm oil as a fuel: see 224.3*
  - 533.3 coconut; copra
  - 533.4 soya
  - 533.5 castor bean
  - 533.6 essential oils and resins
  - 533.7 nut processing
- 534 sugar, stimulants and spices processing
  - 534.1 sugar production
  - 534.2 coffee production
  - 534.3 tea processing
  - 534.4 cocoa processing
    - chocolate production, cocoa production
  - 534.5 confectionery
  - 534.6 spices and herbs processing
    - 534.61 pepper
    - 534.62 vanilla
    - 534.63 clove-tree
    - 534.64 ginger
  - 534.7 tobacco processing

- 535 beverages
  - fermentation techniques and equipment
  - 535.1 juices and syrups
  - 535.2 alcoholic beverages
  - 535.3 vinegar production
  - 535.4 soft drinks
    - mineral water
  
- 536 animal product processing
  - for hide and fur processing: see 626-628*
  - 536.1 meat, animal fat and oil production
    - 536.11 slaughtering
    - 536.12 storage of meat
    - 536.13 beef
    - 536.14 pork
    - 536.15 mutton
    - 536.16 poultry meat
  - 536.2 milk processing
    - 536.21 milk conservation
    - 536.22 butter
    - 536.23 cheese
    - 536.24 yoghurt
  - 536.3 egg processing
  - 536.4 fish processing
    - fish by-product processing, fish flour, fish oil
  - 536.41 fish storage, conservation and curing
    - freezing, salting, smoking, drying
  - 536.42 cutting and filleting
  - 536.43 fish meal
  - 536.44 fish oil
  
- 537 --
  
- 538 high protein food processing
  - microbiological high protein food production
  - for algae: see 473*
  - for production of vegetable high protein: see appropriate group in agriculture*
  
- 539 N.E.C.

PACKING, STORAGE AND TRANSPORT OF AGRICULTURAL PRODUCTS AND FOOD PRODUCTS

general on-farm and off-farm techniques;  
manufacture, use and maintenance of equipment  
for storage and packaging of specific crops: see 530-539  
and for agricultural transportation: see 412

- 540 packing, storage and transport of agricultural products and food products: generalities
- 541 packaging  
for production of packaging material for specific crops: see appropriate group in 530-539
- 542 agricultural product and food storage  
for cool storage: see 525  
for general storage facilities: see 151
- 542.1 silos  
construction, operation and maintenance
- 542.2 other storage methods and equipment  
see also 520-529
- 542.3 pest control in storage  
for production of agricultural chemicals: see 656  
see also 124, 433.2
- 542.4 humidity control in storage  
general works
- 543 agricultural product and food transportation and handling  
systems, techniques; manufacture, use and maintenance of equipment  
for general transport: see 150-159  
for agricultural transport: see 412
- 549 N.E.C.

AGRICULTURAL BY-PRODUCT AND FOOD RESIDUE PROCESSING

recycling of agricultural and food waste  
for energy use: see 220-229  
for composting: see 424.2  
see also 122, 404

- 550 agricultural by-product and food residue processing: generalities
- 559 N.E.C.

# 6

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## manufacture, engineering and services

- 600 manufacture, engineering and services:  
generalities
- 601 industrial economics and management
  - types of enterprises (co-operatives, private enterprises, collective ownership); accounting
  - quality control; marketing
  - see also 112, 116, 117, 401, 500-509*
- 602 credit and financing
  - banking and insurance, credit unions, saving associations, loan associations
  - see also 117, 401.3*
- 603 industrial training and consulting
  - see also 114, 170-179, 403*
- 604 licences and patents
  - contracts
  - see also 102.1*
- 605 social aspects
  - trade unions, labour force, employment, safety
- 606 industrial profiles
  - studies covering several sectors
  - see also 114*



- 607 organisation of services  
- setting up, management
- 607.1 repair and maintenance units  
*for garages: see 153*
- 607.2 cleaning and washing units
- 607.3 tourism and hotels  
*see also 137*
- 609 N.E.C.

#### MINING AND QUARRYING

- all mining and quarrying techniques; manufacture, use and maintenance of equipment; prospection: industrial geology  
*for natural resources: see 121*  
*for energy use: see 210-219*  
*for further processing: see 650-659, 660-669, 670-679*  
*for stone cutting: see 722*  
*for excavation construction: see 754*
- 610 mining and quarrying: generalities  
- sciences, industrial geology, prospection
- 611 general mining and quarrying techniques and equipment  
- underground and surface mining
- 612 metal ore mining  
- ferrous and non-ferrous metals: iron ore, magniferrous iron ore, bauxite, copper, chromium, tin, lead, zinc, precious metals
- 613 fossil mining  
- crude petroleum, natural gas, coal, shale
- 614 salt mining  
rock salt mining  
- crushing, screening, refining  
*for evaporation salts: see 235*
- 615 stone quarrying, clay and sand pits  
- extraction, shaping, pulverising, grinding and treating of stone, gravel, ceramic, clay, sand, slate, sand cleaning

616 non metallic minerals  
- minerals for chemicals and fertilisers; nitrates,  
fluorspar, sulphur, potash sodium, barytes,  
pyrites, borate minerals, arsenic

619 N.E.C.

#### MANUFACTURE OF WEARING APPAREL AND LEATHER

*for synthetic fibre production: see 658*

620 manufacture of wearing apparel and leather:  
generalities

621 spinning  
spinning and preparation for spinning; cotton and  
wool processing  
- ginning, retting, scutching, scouring, carding,  
combing; spinning wheels

622 weaving and knotting  
- carpets, rugs, blankets; weaving looms

623 bleaching, dyeing and textile printing  
- batik works, calico printing  
*see also 445, 653*

624 textile finishing  
- wearing apparel, cutting, sewing, knitting,  
needlecrafts (lace making, embroidery)  
*for wearing accessories (zips, fasteners, buttons): see  
658, 662*

625 production of natural fibre based products  
- ropes, nets, mats, straw hats, brooms and  
brushes; jute mills

626 generalities on leather and fur industries

627 preparation of leather and furs  
- tanning, currying, dyeing, finishing, embossing,  
japanning

628 manufacture of leather and fur products  
- footwear, clothing, saddles, bags and other  
skin articles (wash leathers, chamois-leather)

629 N.E.C.

MANUFACTURE OF WOOD, WOODEN PRODUCTS AND FURNITURE

- cork, bamboo, cane  
*for logging: see 463*
- 630 manufacture of wood, wooden products and furniture:  
generalities
- 631 general woodworking tools and machinery  
- saw mills  
*for energy use of wood waste: see 225, 226*
- 632 timber and board production  
- conservation, treatment and impregnation
  - 632.1 wood drying  
*for solar drying of wood: see 237*
  - 632.2 wood treatment and preservation
  - 632.3 board preparation  
- plywood board, fibre board, particle  
board
- 633 manufacture of wooden products  
further wood processing: carpentry, upholstery,  
packing material (crates), wood carvings, wooden  
bearings, wooden toys  
- cork, cane products
- 634 furniture and joinery industries  
- doors, windows, cupboards
- 639 N.E.C.

MANUFACTURE OF PULP, PAPER AND PAPER PRODUCTS

- 640 manufacture of pulp, paper and paper products:  
generalities
- 641 manufacture of pulp, paper and cardboard  
- various types of paper
  - 641.1 pulp making
  - 641.2 paper and cardboard making
- 642 manufacture of paper products  
- packaging material; sandpaper, glass-paper
- 643 printing, duplicating and bookbinding  
- reproduction techniques; graphic design  
*for ink making: see 654*  
*see also 163*
- 649 N.E.C.

MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS

- from natural and synthetic materials  
*for drugs and pharmaceuticals: see 850-859*  
*for extraction: see 610-619*
- 650 manufacture of chemicals and chemical products:  
generalities  
- electro chemistry
- 651 --
- 652 basic chemicals  
- inorganic chemicals: sulphuric acid, soda ash,  
caustic soda, nitric acid, phosphoric acid;  
organic chemicals: ethanol, phenol, benzene,  
acetic acid  
*for production of alcohol from biomass: see 224*
- 653 soaps, cleaning chemicals, dyeing chemicals,  
cosmetics  
- water proofing agents, laundry and dry cleaning  
chemicals  
*for essential oils: see 447, 533.6*
  - 653.1 soaps and detergents
  - 653.2 dyeing agents and bleaching agents  
- dye, indigo
  - 653.3 cosmetics, perfumes  
- dental paste
- 654 paints, varnishes, lacquers, pigments, inks, resins  
and glues  
- polishes  
*see also 445*
- 655 other chemical products  
- photographic chemicals, explosives,  
electroplating chemicals
  - 655.1 candles  
- wax processing
- 656 agricultural chemicals  
*for growing of insecticidal plants: see 445*  
*for use of agricultural chemicals: see 424.2, 433, 462,  
540-549*
  - 656.1 pesticides  
- herbicides, insecticides, fungicides
  - 656.2 chemical fertilisers

- 657 petrochemicals, lubricants and greases  
- reclamation of used lubricants and oils,  
vaseline  
*see also 727*
- 658 rubber and plastics  
- vulcanized and moulded rubber products,  
synthetic fibres (plastics); synthetic fibre  
production, rubber and plastic footwear;  
tyres, tubes and hoses; plastic building  
material
- 659 N.E.C.

#### MANUFACTURE OF NON-METALLIC MINERAL PRODUCTS

*for production of cement: see 723*  
*for production of lime and gypsum: see 724*

- 660 manufacture of non-metallic mineral products:  
generalities
- 661 pottery and ceramics  
- clay products, china and earthenware, pottery  
kilns
- 662 manufacture of glass and glass products  
- mineral wool, glassware, mirrors
- 663 jewellery and button making  
- all materials
- 664 other non-metallic mineral products  
- chalk
- 669 N.E.C.

#### MANUFACTURE OF METAL AND METAL PRODUCTS

non-ferrous metal products and metal products  
with non-metallic components; workshop  
techniques and tools

- 670 manufacture of metal and metal products:  
generalities  
properties of metals, mechanical engineering

- 671 manufacture of basic metals
  - iron, steel, non-ferrous metals; melting, alloying, shaping into bars and sheets, metal scrappage recycling, foundry techniques, galvanizing, metal plating
- 672 general metal working techniques and equipment not for specific products
  - forging and blacksmithing, casting, shaping, moulding, welding, metal cutting (boring, drilling, milling, grinding, hardening, tempering), lathes, presses, forges
  - 672.1 forging and blacksmithing
- 673 manufacture of general hand tools, parts and workshop equipment
  - fasteners (bolts, nuts), metal cans, drums, wires, springs, piston rings, valves
  - general tools for various uses (hammers)
  - for (hand) tools for specific activities: see appropriate group*
  - 673.1 general hand tools
    - cutlery
  - 673.2 parts
- 674 manufacture of other metal products and other machinery
- 675 manufacture of instrumentation devices
  - watches, optical instruments, measurement instruments, microscopes, spectacles, lenses
- 679 N.E.C.

#### MANUFACTURE OF ELECTRICAL AND ELECTRONIC EQUIPMENT

- general electrical and electronic equipment for various uses
  - for devices for specific use: see appropriate group*
- 680 manufacture of electrical and electronic equipment: generalities
- 681 general electrical appliances and machinery
  - motors, cables, contacts, transformers, switch gear, conduits, fittings, fixtures
- 682 manufacture of household appliances

683 basic electronics and electronic appliances  
- electronic data processing equipment;  
computers

689 N.E.C.

# 7

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## building and construction works

- 700 building and construction works: generalities  
- building site preparation, surveying, building site management, industrialisation of construction, building contractors  
*for settlement planning and housing programs: see 140-149*  
*for extraction of building materials: see 610-619*

### BUILDING DESIGN

- descriptions of buildings and building designs without the actual construction process, building requirements  
*for building techniques and elements: see 730-739*
- 710 building design: generalities  
- designing, economics of houses, building regulations
- 711 building design specific to use  
*for specific building requirements: see appropriate group*
- 711.1 houses  
- permanent, emergency and temporary houses

*continued*



- 711.2 agricultural buildings
  - construction of greenhouses for agricultural use
  - for construction of greenhouses for energy use: see 231.4*
  - for use in agriculture: see 432.5*
- 711.3 industrial and commercial buildings
- 711.4 educational buildings
- 711.5 medical buildings
- 711.6 hospitals, dispensaries
- 711.6 cultural, religious and community buildings
- 711.7 public buildings
- 711.8 non-specific structures (towers, masts)
  - permanent support
  
- 712 building design specific to environment
  - earthquake and cyclone proof buildings, energy efficient design
- 712.1 tropical buildings
- 712.2 earthquake proof buildings
  - see also 124, 745*
- 712.3 bioclimatic houses, solar houses
  - energy saving in houses
  
- 713 building design specific to building methods
- 713.1 massive and shell buildings
- 713.2 skeleton buildings
- 713.3 pre-fabricated buildings
  
- 719 N.E.C.

#### CONSTRUCTION MATERIALS

- techniques and equipment specific to the material; production and use of construction material
- for extraction of minerals: see 610-619*
  
- 720 construction materials: generalities
  
- 721 mud and earth
  - burned bricks and tiles, mud bricks, adobe, wood wool blocks, cement blocks, pisé; brick presses, mud block presses, brick kilns, stabilised earth

- 722 natural stone and sand
  - stone cutting
  - for quarrying: see 615*
- 723 cement, ferro-cement, concrete, reinforced concrete
  - fibro-cement, rice husk ash cement, asbestos cement
  - for fibro-cement roofing sheets: see 734*
- 724 lime, gypsum, pozzolane and other binding materials
  - use and production of pozzolane and other binding materials (sulphur, fly ash); lime kilns
- 725 wood, bamboo, reeds, grasses, canes, palms and other vegetable building materials
  - for production: see group 4*
  - for treatment and impregnation: see 632*
  - for termite control: see 745*
  - for wood board construction: see 632.3*
- 726 plastic building materials
  - see also 658*
- 727 bitumen, asphalt and tar
  - see also 657*
- 728 metallic and other building materials
- 729 N.E.C.

#### BUILDING TECHNIQUES AND ELEMENTS

- 730 building techniques and elements: generalities
- 731 general building techniques and equipment
  - scaffolding
  - for carpentry: see 633*
- 732 foundations
- 733 walls
  - masonry and brick laying, wall finishing, whitewash
- 734 roofs and vaults
  - fibro-cement roofing sheets, cane roofs, thatching
- 735 floors, ceilings, staircases and chimneys
- 739 N.E.C.

## TECHNICAL SERVICES AND BUILDING PROTECTION

- 740 technical services and building protection:  
generalities  
- lighting, energy in houses  
*for energy saving in houses: see 712*  
*for energy production: see appropriate group in 2*
- 741 plumbing
- 741.1 water and sanitary installation  
*see also 360-369*
- 741.2 gas installation  
- natural gas, biogas  
*see also 213, 221*
- 742 --
- 743 electrical installation  
*see also 282, 681*
- 744 climate control systems installation  
- heating, cooling, insulation, ventilation;  
sound insulation; chimneys  
*see also 124, 712, 632, 433.2*
- 745 building protection  
- fire, lightning, humidity and insect protection;  
termite control
- 746 building maintenance  
- general house maintenance, home improvement
- 749 N.E.C.

## CONSTRUCTION WORKS

- construction works other than buildings  
- techniques and equipment  
*for transport devices: see 150-159*  
*for general building techniques: see 731*  
*for construction materials: see 720-729*
- 750 construction works: generalities  
- designing, civil engineering
- 751 general construction work techniques  
- earth moving techniques and equipment, levelling
- 752 road construction and maintenance  
- pavements, sidewalks

- 753 bridge construction
- 754 tunnel and excavation construction
  - excavations for mining
  - for mining: see 610-619*
- 755 railway construction
- 756 port, harbour and waterway construction
  - construction of dams, dikes and piers, canals, basins
  - see also 310-319*
- 757 airport construction, runways and taxiways
- 759 N.E.C.

# 8

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## health

- 800 health: generalities
  - general descriptions of different bodies of medical knowledge; policies and programs; general descriptions of health delivery systems
- 801 health policies
  - health systems and services; public health policies
- 802 health planning and management
  - for nutrition programs: see 811*
  - 802.1 planning
  - 802.2 management
  - 802.3 evaluation
- 803 health and community development
- 804 health education and training
  - training of midwives
  - 804.1 community health education
  - 804.2 training of medical staff
  - 804.3 training support of traditional practitioners
  - 804.4 addiction prevention

805 health economics and sociology

- 805.1 health economics
- 805.2 health sociology
- 805.3 medical anthropology  
*see also 130-139*

806 epidemiology and health statistics  
- health records  
*see also 130-139*

809 N.E.C.

NUTRITION

nutritional requirements of the body  
*for nutritional values of foods and food preparation:*  
*see 510-519*  
*see also 830-839*

810 nutrition: generalities

811 malnutrition

- 811.1 anti-nutrition programs and measures
- 811.2 nutrition supervision: programs

812 nutrition hygiene  
- illnesses linked to hygiene, and their  
treatment; prevention; poisons in food  
*for conservation and preservation of food: see 520-529*  
*see also 821, 824*

813 infant and child nutrition  
- lactation, weaning, baby-foods

814 nutritional requirements  
- vitamins

815 nutritional illnesses  
*for food supply: see 500*

- 815.1 undernutrition
- 815.2 over-nutrition

819 N.E.C.

SOCIAL AND PREVENTIVE MEDICINE; HYGIENE

- treatment of specific diseases, injuries and accidents  
*for general methods of treatment of diseases, injuries and accidents: see 840-849*

- 820 social and preventive medicine; hygiene;  
generalities
- 821 environmental health  
- environmental hygiene, preventive methods;  
measures against carriers of diseases  
(e.g. mosquitoes)  
*for housing: see 140*  
*for sanitation: see 360-369*
- 822 vaccinations
- 823 infectious and parasitic diseases  
- sexually transmitted diseases
- 823.1 diarrhoea and faecal parasites
- 823.2 bacterial diseases
- 823.3 malaria
- 823.4 schistosomiasis
- 823.5 onchocerciasis (river blindness),  
trachoma and other eye diseases
- 823.6 filaria  
- dracunculus
- 823.7 trypanosomiasis, Chagan's disease, Leishmaniasis
- 823.8 virus diseases  
- arboviruses; hepatitis
- 824 occupational health  
- illnesses and diseases at and from work,  
preventive measures
- 825 accidents and wounds
- 825.1 accidents in home
- 825.2 transport and traffic accidents
- 826 disabilities  
- prevention, care  
*see also 134*
- 827 mental health  
- psychiatry
- 828 health of migrants  
impact of the change of environment on the health of  
a person
- 829 N.E.C.

## FAMILY HEALTH

- mother and child health and care  
*for preventive medicine and hygiene: see 820-829*  
*for nutrition: see 810-819*

- 830 family health: generalities
- 831 pediatrics  
*for infant and child nutrition: see 813*
- 832 family planning  
sexual education, contraception, abortion
- 833 health of the mother  
pregnancy, childbirth
- 834 health of the adult
- 835 geriatrics
- 839 N.E.C.

## TREATMENT METHODS

diagnosis and general treatment of diseases,  
addictions, illnesses and injuries, according  
to method of treatment  
- surgery and general applications of medicines  
*for nutrition: see 810-819*  
*for treatment of specific diseases: see 820-829*  
*for production of medicines: see 850-859*

- 840 treatment methods: generalities
- 841 allopathic methods of treatment  
'Western medicine'
- 842 traditional medicine  
- acupuncture, ayurveda
- 843 'alternative' methods of treatment  
- parallel medicine: anthroposophic, homeopathic,  
bio-electronic, aromatherapeutic
- 844 surgery
- 845 dentistry  
- dental care, caries control  
*for fluoridation: see 352*
- 846 emergency and disaster treatment methods  
*see also 825, 124*
- 849 N.E.C.



## PRODUCTION OF MEDICINES

- pharmacology, pharmacopoeia  
*for application of medicines: see 840-849*
- 850 production of medicines: generalities
- 851 pharmaceuticals  
*see also 650-659*
- 852 herbal medicines
  - cultivation, harvesting and processing (per plant); preparation of medicines
- 853 other medicines
  - medicines prepared by dispensing chemists
- 854 alcohols, drugs, narcotics and psychotropes  
*for addiction prevention: see 804.4*  
*for addiction treatment: see 840-849*
- 859 N.E.C.

## HEALTH MATERIAL AND EQUIPMENT

- medical equipment; biomedical equipment; systems; techniques; use, production and maintenance of equipment  
*for medical records: see 806*
- 860 health material and equipment: generalities
- 861 medical buildings
  - health centres, dispensaries, hospitals, clinics  
*for construction: see 711.5*
- 862 medical transport and furniture
  - wheelchairs, stretchers, pulleys, operating tables, beds
- 863 small medical equipment
  - syringes, bandages, dressings, scales, portable measuring equipment
- 864 measuring and diagnostic equipment
  - X ray machines, radiography equipment, scanners
- 865 laboratory equipment
- 869 N.E.C.

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