

DOCUMENTATION OF RISIS DATASETS: RISIS Patent Database

Patricia Laurens

▶ To cite this version:

Patricia Laurens. DOCUMENTATION OF RISIS DATASETS: RISIS Patent Database. LISIS, Univ Gustave Eiffel, ESIEE Paris, CNRS, INRAE. 2022. hal-03881028

HAL Id: hal-03881028 https://hal.science/hal-03881028v1

Submitted on 1 Dec 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.







































RISIS



RESEARCH INFRASTRUCTURE FOR SCIENCE AND INNOVATION POLICY STUDIES

DOCUMENTATION OF RISIS DATASETS RISIS Patent

Written by P. Laurens (UGE), Tatiana Sanchez-Castano (UGE) P. Laredo (UGE) 11/2021

B. Heller-Schuh (AIT), M. Barber (AIT), TAIT), G. Zahradnik (AIT)

Risis Patent was constructed by Tatiana Sanchez-Castano (UGE)28/06/201

L. Villard and P. Laurens have also contributed







Outline

| 1 Basic Characteristics | |
|---|------------------|
| 2 Database content | |
| 2.1 Definition and description of observations | |
| 2.2 Data acquisition and processing (e.g. data cleaning | |
| 2.3 Information on all variables/indicators | |
| 2.4 Sectorial, temporal and geographical coverage | |
| 2.5 Quality and accuracy of data | |
| 3 Technical Specifications | 21 |
| 3.1 Information on the data base system | 21 |
| 3.2 Technical variable definition | |
| 3.3 Description of the Entity Relationship Model | |
| 3.4 Interfaces for access and to other infrastructures. | |
| 4 Scientific use and main references | 28 |
| Appendix | (|
| Appendix 1: Artificial patents | 1 |
| Appendix 2: Type of applicants | |
| Appendix 3: Classification of patent technologies | 6 |
| Appendix 4: Building description for International Patent | Classification23 |
| Appendix 5: Data model of PATSTAT2021 | 25 |





1 Basic Characteristics

The RISIS Patent database derives from the EPO PATSTAT. The database is designed for the analysis of technological knowledge creation, using patent as a proxy. It thus focuses on 'priority patents' that represent the creation of new knowledge, while other non-priority patents describe either technical ameliorations or market extensions and are mobilised as indicators of the importance of the priority patent. We shall explain in the documentation an important enrichment made to ensure a good coverage of the priority patents, that is the reintroduction in the database of so-called 'artificial priority patents' (11,7% of total priority patents).

Overall, 20,656,894 priority patents of inventions were applied for by legal entities from 2000 to 2020¹. They include 59,150,156 inventors².

As we are first interested in tracking knowledge creation, (more than the extension of the knowledge protection), the dates that matter, are the first filing date (when the organisation is applying for a priority patent, i.e., the first filing for a new invention) and the first publication date, as the time stamp of when the knowledge has been created is an important information for research.

Besides the date of the filing and the office where the patent was first filed, we specifically consider in RISIS Patent 5 core attributes on patents:

- Their content, using textual pieces of information such as the patent titles, the patent abstracts³ and a text aggregating the definition of the patent IPC (International Patent Classification) codes. Based on the definition of some **75000 IPC classes** provided for by PATSTAT, the latter builds a rich vocabulary enriching widely the content available for semantic analyses.
- Their technological content using the standard technology classification: (IPC subclasses, aggregation of IPC codes) by technological domains, fields or subfields. Patent allocation in the different classifications is realised on a fractional count basis according to their IPC.
- The geographical location of inventive activities. As we are interested in the geography of knowledge creation, we focus on inventors' addresses (instead of using applicants' addresses which would more capture commercialisation). We shall explain the difficulties associated with this approach and the extensive developments made. These addresses are geocoded and associated to 'functional areas' (urban and rural) worldwide mobilizing the RISIS CORTEXT geocoding service.

¹ i.e. ipr_type = PI in PATSTAT

² Corresponding to 11,970,694 distinct person_id.

³ Translation in English for titles and abstracts that remain in their native language will be included in a next release of RISIS Patent.





- The legal organisations that apply for patents (the applicants). We use both available (but tested and in part improved) types proposed by PATSTAT. But one central effort is to articulate it and mobilise the extensive work done by other RISIS databases to identify worldwide large firms (CIB), European fast growing mid-sized firms (Cheetah), European venture capital backed start-up firms (VICO) and European public research organisations (ORGREG covering universities, PROs and research hospitals). ORGREG entities as patent applicants are already recognized in this new updated RPD version. The link with CIB, VICO and CHEETAH databases will be implemented step by step in 2023.

The complete methodology used to build the RPD database is detailed in https://gitlab.com/cortext/patents/patstat/-/tree/version-2021/version_2021

- Characteristics linked to the 'value' of the patent: In this context, the database provides information on whether the patent was granted or not, as well as the size of patent families, i.e. the number of different applications for a given invention (or group of linked inventions), which tells something about the interest of applicants for developing and protecting the knowledge; moreover, the presence in 5 world-level patent offices (EPO, USPTO, Japan Patent Office, Korean Patent Office, China Patent Office) tells something about the potential for future markets; and citations they have received indicate knowledge flows to other inventions and therefore its value for further technological development.

The coverage of the database is 2000-2020 (using the PATSTAT 2021 Edition April as a source) but the PATSTAT coverage for patent applied in 2020 is very limited. The first release is in November 2022. Further releases including the tagging of Tirmreg entities (CIB, CHEETAH, VICO) as applicants will be displayed in 2023. The database will be only periodically updated using new PATSTAT version. The database is developed and maintained by UGE. The database is located on the servers of UGE at Marne La Vallee, France.

2 Database content

2.1 Definition and description of observations

As a proxy for knowledge creation, the unit of observation is a priority patent application, i.e. the very first patent application, anywhere in the world to protect an invention. The priority date is used to determine the novelty of the invention, which implies that it is an important concept in patent procedures. For statistical purposes, the priority date is the closest date to the date of invention.

In RPD, we consider only applications of priority patents of invention (i.e. ipr_type = PI in PATSTAT)⁴. Accordingly, the database covers priority patents applied since 2000, whether or not they turn later into granted patents. The 20,656,894 priority patents are distributed across three main types of applications:

_

⁴ Other types of patent are: Utility Models (ipr_type = 'UM') and Design patents (ipr_type = 'DP').





-a large category of patents 'A', i.e. 'regular' patents following the Paris convention (appln kind ='A'): 19,198,231 applications,

-provisional patent, i.e. preliminary and temporary patents proposed in some patent offices like USPTO (appln_kind = 'P'): 1,153,226 applications,

-PCT patent in the international phase (appln_kind = 'W'): 305,437 applications.

We also include priority patents tagged as 'artificial priority patents due to priorities' in PATSTAT (11,7% of the overall priorities in RPD but 50,6% in the priorities applied at the US patent office and 38,7% the priorities applied at the EPO). As these latter documents only contain the filling date and patent office in PATSTAT, we have devised a complex method to fill the information on their applicants, inventors, title, IPC classes. (See Appendix 1 for the description of technical developments and share of applications by patent offices and Laurens et al., 2018⁵ for the importance of such an enrichment).

As we are interested in the development of organised knowledge, we focus only on patents taken by organisations, i.e., legal persons (firms, university, NGO...); therefore, the priority patents applied only by natural persons have been discarded.

Moreover, when a co-application of patent includes both legal and natural persons, the patent is maintained in the database with its legal applicant only.

In order to do so, we have first devised a method to recognise applicants that are 'natural persons', and we take them out from the database.

A fractional counting was employed to calculate the number of legal applicants in a patent applications: All applicants with a fract_applt_below 1 have legal co-applicants.

2.2 Data acquisition and processing (e.g. data cleaning)

a) Data sources

The RISIS Patent database uses four sources of information. It builds first and mainly on the PATSTAT public database from EPO (version April 2021). Secondary, sources are used for complementing this main data source, mainly for filling addresses that are void in PATSTAT:

- REGPAT data base (provided freely on request) from OECD that presents patent data that have been linked to regions according to the addresses of the applicants and inventors.
- Data from the French patent office (INPI) for filling addresses in patent applications from INPI that are missing in PATSTAT.

_

⁵ Laurens et al., 2018, "The artificial patents in the PATSTAT database: how much do they matter when computing indicators of internationalisation based on worlwide priority patents?" Scientometrics 114,1, 91–112.





• Data from the Japanese patent office (JPO) for filling addresses in patent applications from JPO that are missing in PATSTAT.

b) Data processing

The principal data processing includes:

1- Data enrichment steps of the initial raw patent data

- Filling missing addresses, missing information on IPC (international patent classification) and on inventors and applicants using the REGPAT, INPI and JPO data (see above),
- Re-allocation of addresses' information contained in other fields (person" names)
- Propagating information (using fuzzy matching) within patent families for missing info on applicants and inventors,
- Propagating information for filling information in artificial applications using other applications within patent families,

2- Addition of complementary information

- Identifying priority patent applications, the artificial priority applications, singletons (i.e. lone patent applications in an Inpadoc family), transnational patents (applied in at least 2 patent offices), triadic patents (applied in at JP, EP, US), ip5 family patents (applied in at least 1 IP5 patent office), 2ip5 family patents (applied in at least 2 IP5 patent offices) and ip5 patents (applied in the 5 IP5 patent offices),
- Identifying the type of applicants (legal/person/unknown),
- Extraction, cleaning and harmonisation of country information for applicants and inventors by analysing respectively applicants' and inventors' addresses,
- Addition of geographical classification on continent for applicants and inventors.
- Geocoding of addresses (applicants and inventors),
- Attribution of the urban area for the address based on geocoded data,
- Addition of information on technology classification at three levels (5 domains, technology fields according to WIPO classification in 35 categories and technology subfields according to IFRIS classification in 400 categories),
- Addition of the IPC definition (full textual information),
- Extraction of year of application from the date of application,
- Addition of tags characterising the patent applications with no inventors, the patent applications with no IPC,
- Fractional counting at the patent application level according to different dimensions: technological classifications, number of applicants, number of inventors,
- Calculation of the priority patent geographical coverage (based on patent families): number of patent offices, applications in the IP5 patent offices (EPO, USPTO, JPO, SINO, KINO), number of patents in the docdb and inpadoc families of the priority applications.
- Assignement of an ORGREG-ID for applicants belonging the ORGREG repository (using ORGREG data available in winter 2021).





3- Filtering of patents

We select only priority patents of inventions applied from 2000 to 2020 with at least one legal applicant (including artificial priority applications).

4- Creation of the final tables

The final tables includes data on priority patents only and covering 6 dimensions: Basic patent data, Geographical data on inventors and applicants, Institutional data on applicants, Technological data based on classification, Textual data, Patent value data.

2.3 Information on all variables/indicators

For each priority patent application, the database gives:

- patent ID number
- date of first filing
- country of first filing
- date of first publication
- date of first granting
- title
- abstract
- IPC categories mentioned: their number and their language description: as many variables as IPC categories, only one linguistic description
- whether the patent is a singleton (only one single application) or not
- whether the patent is a transnational patent, i.e., was the priority application extended in at least a foreign country) or not
- size of the DOCDB family
- size of the INPADOC family
- presence (directly or through extension) in the 5 core offices (so called IP 5 families) (5 variables Y/N per office)
- For each applicant: the applicant 'natural name' and its ID; the applicant standardised name and its ID; the applicant standardised name by Leuven and its ID; the applicant RISIS standardised name and its ID when available
- For each inventor: same variables as for applicants
- For each applicant: presence or not in the CIB database (next release), name and
 ID of the group firm (GUO) (next release), presence or not in the CHEETAH





database(next release), ID of the Cheetah firm (next release), presence or not in the VICO database and ID of the VICO firm(next release); presence in firmreg database and Firmreg ID. (to be provided in 2023) (next release), presence or not in the ORGREG repository and Orgreg_id

- For each applicant: The applicant address, the applicant geo coordinates, the applicant urban and rural cluster it belongs to, the NUTS3 regions for EU countries
- For each inventor: the inventor address, the inventor geo coordinates, the inventor urban or rural cluster he/she belongs to, the NUTS3 regions for EU countries

2.4 Sectorial, temporal and geographical coverage

- Sectorial coverage

Sectors of the legal applicants

In the current RISIS Patent database, we rely on the sectorial information provided in the raw PATSTAT database⁶. Data are shown in the table below.

Table 1: Industrial sectors of priority patent applicants

| psn_sector | Number of applicants | Share of applicants |
|-----------------------------------|----------------------|---------------------|
| NULL | 33 | 0,0% |
| COMPANY | 18,284,645 | 81,0% |
| COMPANY GOV NON-PROFIT | 41,637 | 0,2% |
| COMPANY GOV NON-PROFIT UNIVERSITY | 1,460 | 0,0% |
| COMPANY HOSPITAL | 1,636 | 0,0% |
| COMPANY UNIVERSITY | 4,164 | 0,0% |
| GOV NON-PROFIT | 701,141 | 3,1% |
| GOV NON-PROFIT HOSPITAL | 2 | 0,0% |
| GOV NON-PROFIT UNIVERSITY | 201,021 | 0,9% |
| HOSPITAL | 36,288 | 0,2% |
| INDIVIDUAL | 511,261 | 2,3% |
| UNIVERSITY | 2,361,015 | 10,5% |
| UNKNOWN | 423,876 | 1,9% |
| Total | 22,568,179 | 100,0% |

For about 96% of the applicants, our identification of the applicant status (legal vs individual) follows the sector (legal/individual/unknown) assigned in Patstat. However, we

⁶ Harmonizing names and allocation of assignee sectors in Patstat raw data was done by ECOOM (K.U. LEUVEN; http://www.ecoom.be/en/EEE-PPAT).





have discarded about 0.6% of the applicants assigned as legal in Patstat (and considered as individual according to our treatment and further checking steps). Conversely, we have included 2.3% of applicants considered as Individuals in Patstat. In this set, we have detected company names and we need further checking.

Moreover, our own matching of ORGREG entities with patent applicant names in RPD has shown that among the 22.5millions of applicants, 0,79% are ORGREG entities. They have applied for 156,132 patents (0,76% of RPD priority patents).

Technological coverage of patents

There is a thematic coverage of the technology that the patents protect linked to the IPC classification of patents (one patent can belong to multiple classes). Patents are allocated to fields of technology on a fractional count basis according to their IPC. Building on the correspondence table developed by ISI FhG for WIPO - which defines domains (5) and fields (35) of technology, an additional level of sub fields (401) of technology was developed (See Appendix 3 on technological fields).

The distributions of patents with the domains and the technological fields are shown below.

Table 1: Domains of technology of priority patent applications

| Domain code | Domain name | Number of patents (fractional counting) | Share of patents |
|-------------|------------------------|---|------------------|
| TD01 | Electrical engineering | 6,605,360 | 32,6% |
| TD02 | Instruments | 2,996,713 | 14,8% |
| TD03 | Chemistry | 4,399,498 | 21,7% |
| TD04 | Mechanical engineering | 4,620,405 | 22,8% |
| TD05 | Other fields | 1,619,730 | 8,0% |
| Total | | 20,241,706 | 100,0% |

Table 2: Technology fields of priority patent applications

| Field code | Field_name | Number of patents (fractional counting) | Share of patents |
|------------|---|---|------------------|
| TF01 | Electrical machinery, apparatus, energy | 1,460,025 | 7,2% |
| TF02 | Audio-visual technology | 745,623 | 3,7% |
| TF03 | Telecommunications | 550,958 | 2,7% |
| TF04 | Digital communication | 870,580 | 4,3% |
| TF05 | Basic communication processes | 154,328 | 0,8% |
| TF06 | Computer technology | 1,696,641 | 8,4% |
| TF07 | IT methods for management | 393,579 | 1,9% |
| TF08 | Semiconductors | 733,624 | 3,6% |
| TF09 | Optics | 697,791 | 3,4% |
| TF10 | Measurement | 1,136,741 | 5,6% |





| TF11 | Analysis of biological materials | 106,365 | 0,5% |
|-------|--------------------------------------|------------|--------|
| TF12 | Control | 439,344 | 2,2% |
| TF13 | Medical technology | 616,473 | 3,0% |
| TF14 | Organic fine chemistry | 357,053 | 1,8% |
| TF15 | Biotechnology | 301,112 | 1,5% |
| TF16 | Pharmaceuticals | 582,232 | 2,9% |
| TF17 | Macromolecular chemistry, polymers | 387,679 | 1,9% |
| TF18 | Food chemistry | 390,867 | 1,9% |
| TF19 | Basic materials chemistry | 535,738 | 2,6% |
| TF20 | Materials, metallurgy | 546,088 | 2,7% |
| TF21 | Surface technology, coating | 352,656 | 1,7% |
| TF22 | Micro-structural and nano-technology | 37,708 | 0,2% |
| TF23 | Chemical engineering | 519,153 | 2,6% |
| TF24 | Environmental technology | 389,211 | 1,9% |
| TF25 | Handling | 603,590 | 3,0% |
| TF26 | Machine tools | 677,266 | 3,3% |
| TF27 | Engines, pumps, turbines | 463,621 | 2,3% |
| TF28 | Textile and paper machines | 405,759 | 2,0% |
| TF29 | Other special machines | 672,267 | 3,3% |
| TF30 | Thermal processes and apparatus | 388,143 | 1,9% |
| TF31 | Mechanical elements | 553,279 | 2,7% |
| TF32 | Transport | 856,482 | 4,2% |
| TF33 | Furniture, games | 528,471 | 2,6% |
| TF34 | Other consumer goods | 332,163 | 1,6% |
| TF35 | Civil engineering | 759,096 | 3,8% |
| Total | | 20,241,706 | 100,0% |

- Temporal coverage

The database of this first release covers patent applications from 2000 to 2020 (based upon PATSTAT2021 Version Spring). It is most likely that years 2019 and 2020 are still only partially filled. It includes 20,241,706 applications of priority patents

The number of PI priority patents applied every year is shown below. It has increased by 170% during the 18 years. Year 2020 is poorly completed.

Table 3: Number of priority patent applications over time

| Filing year | Number of PI priority patent applications | |
|-------------|---|--|
| 2000 | 670,246 | |
| 2001 | 678,265 | |
| 2002 | 665,576 | |
| 2003 | 680,682 | |





| 2004 | 693,834 | |
|-------|--------------------------|--|
| 2005 | 730,992 | |
| 2006 | 746,253 | |
| 2007 | 765,074 | |
| 2008 | 793,153 | |
| 2009 | 775,383 | |
| 2010 | 833,730 | |
| 2011 | 906,741 | |
| 2012 | 1,042,377 | |
| 2013 | 1,160,214 | |
| 2014 | 1,223,779 | |
| 2015 | 1,339,724 | |
| 2016 | 1,526,923 | |
| 2017 | 1,716,362 | |
| 2018 | 1,833,727 | |
| 2019 | (1,341,263) ¹ | |
| 2020 | (532,596) ¹ | |
| Total | 20,656,894 | |

- Geographical coverage

Geography of the PI protection

The data cover all priority patent applications worldwide, i.e. at all regional and national offices in the world (see table below). More than 50% of the priority applications are applied for at the Japanese or Chinese ones. The IP5 patent offices (US, EP, JP, CN, KR) cumulate together 86,2% of the applications.

Table 4: Number of priority patent applications and share of artificial priorities according to the patent offices

| Patent office | Number of PI patent applications | Distribution of PI patent applications | Share of artificial priority patents |
|---------------|----------------------------------|--|--------------------------------------|
| CN | 8,034,493 | 38,9% | 0,9% |
| JP | 5,214,992 | 25,2% | 11,7% |
| US | 2,534,379 | 12,3% | 50,6% |
| KR | 1,696,261 | 8,2% | 4,8% |
| DE | 726,530 | 3,5% | 10,2% |
| EP | 328,008 | 1,6% | 38,7% |
| GB | 305,440 | 1,5% | 0,5% |
| wo | 305,437 | 1,5% | 5,2% |
| RU | 287,777 | 1,4% | 0,5% |
| TW | 270,273 | 1,3% | 1,9% |





| FR | 223,880 | 1,1% | 2,0% |
|--------|------------|-------|-------|
| IT | 114,231 | 0,6% | 9,8% |
| AU | 79,318 | 0,4% | 44,1% |
| PL | 45,934 | 0,2% | 0,8% |
| BR | 42,482 | 0,2% | 1,3% |
| IN | 36,576 | 0,2% | 87,6% |
| SE | 35,180 | 0,2% | 20,4% |
| ES | 29,644 | 0,1% | 5,7% |
| NL | 29,109 | 0,1% | 10,3% |
| FI | 24,594 | 0,1% | 7,9% |
| UA | 22,977 | 0,1% | 2,9% |
| TR | 22,840 | 0,1% | 24,2% |
| Others | 246,539 | 12,0% | |
| Total | 20,656,894 | 100% | 11,7% |

After a first priority patent application for a new invention, the IP protection can be further extended in several geographical countries considered as future market. The following tables give information on the geography of the patent protection of a given priority patent using data available in its Inpadoc family. Most of the patents, for a given invention are applied in a single patent office and only 25% of the priority patents are transnational, i.e. further extended in another patent office (20% from 2 to 5 patent offices).

Table 6: Number of patent offices where patents are applied for a given invention

| Number_of distinct patent offices in the inpadoc family | Number of priority patents | Share of priority patents |
|---|----------------------------|---------------------------|
| 1 | 15,500,510 | 75,0% |
| 2 | 1,742,758 | 8,4% |
| 3 | 1,000,989 | 4,8% |
| 4 | 770,614 | 3,7% |
| 5 | 583,166 | 2,8% |
| More than 5 | 1,642,023 | 5,1% |
| Total | 20,656,894 | 100,0% |

Almost 50% of the inventions are protected in China (either in the first (39%) or secondary (20%) subsequent filings), 28% in Japan, 24% in US, 12% at EPO, 12% in Korea. 16% of the families include a PCT patent⁷. Respectively 23,8% and 17,3% of the patents were applied (first filling or further geographical extension) in at least 1 or 2 IP5 patent offices. Only 1.3% of them have been applied in the 5 IP5 patent offices. Only 37% of the patents are granted (either because they were rejected or because the granting decision is still pending).

-

⁷ The Patent Cooperation Treaty (PCT) provides a unified procedure for filing patent applications to protect inventions in each of its contracting states. A patent application filed under the PCT is called an international application, or PCT application.





Table 7: Number and share of patents (priority or secondary applications) applied in the five largest patent offices (IP5 patent offices) and other offices

| Content of Inpadoc family ⁸ | Number of priority patents | Share of priority patents |
|--|----------------------------|---------------------------|
| Total | 20,656,894 | 100% |
| US application | 4,894,036 | 23,7% |
| EP application | 2,526,412 | 12,2% |
| JP application | 5,713,216 | 27,7% |
| KR application | 2,472,223 | 12,0% |
| CN application | 10,145,321 | 49,1% |
| W application | 3,312,187 | 16,0% |
| Transnational patent | 5,156,384 | 25,% |
| Triadic | 719,293 | 3,5% |
| lp5 | 273 ,801 | 1,3% |
| 2ip5 family | 3,567,686 | 17,3% |
| lp5 family | 4,912,441 | 23,8% |
| Granted | 7,673,581 | 37,1% |

Geography of the inventions

In 80% of the patents, the information of the inventors" geographical location is given (country assignment); in 75% of the patents, the information of the applicants" geographical location is given (country assignment).

The shares of patents, inventors' addresses and applicants' addresses according to the inventors' and applicants' addresses are shown in the tables below.

Among the 59 million inventors, the geographical location (country assignment) was identified for 83% of them and for 61% of them, the addresses were geocoded and assigned to an URA (Urban and Rural Area). Among the 22 million applicants, the geographical location (country assignment) was identified for 76% of them and for 63% of them, the addresses were geocoded and assigned to an URA.

Almost 30% of RPD priority patents have at least one inventor located in China. Then come Japanese inventors (27% of the patents) and US inventors (10% of the patents). More than 65% of the patents have at least one Asian inventor and more than 75% of the overall set of inventors are located in Asia.

Table 8: Number of priority patent applications according to the country of inventors

| Country of inventors | Number of patent applications with inventor from the country | Share of patent applications with inventor from the country |
|----------------------|--|---|
| CN | 6,049,743 | 29,3% |
| JP | 5,545,334 | 26,8% |

⁸ Only ipr_type: PI is considered in inpadoc family.

.





| Unknown | 4,135,671 | 20,0% |
|-------------------------|------------|-------|
| US | 2,162,462 | 10,5% |
| KR | 1,706,754 | 8,3% |
| DE | 885,923 | 4,3% |
| TW | 433,187 | 2,1% |
| FR | 310,509 | 1,5% |
| RU | 251,011 | 1,2% |
| GB | 159,517 | 0,8% |
| IT | 140,428 | 0,7% |
| CA | 135,854 | 0,7% |
| NL | 110,184 | 0,5% |
| СН | 96,095 | 0,5% |
| IN | 90,057 | 0,4% |
| SE | 86,902 | 0,4% |
| AU | 64,210 | 0,3% |
| IL | 59,691 | 0,3% |
| ES | 54,321 | 0,3% |
| PL | 51,518 | 0,2% |
| FI | 49,644 | 0,2% |
| BR | 48,115 | 0,2% |
| AT | 46,379 | 0,2% |
| BE | 46,364 | 0,2% |
| нк | 44,415 | 0,2% |
| DK | 41,162 | 0,2% |
| SG | 33,929 | 0,2% |
| TR | 26,860 | 0,1% |
| UA | 25,654 | 0,1% |
| NO | 19,376 | 0,1% |
| Total number of patents | 20,656,894 | 100% |

Table 9: Number and share of inventors according to the country of inventors. Share of inventors allocated to URAs and NUTS3 regions

| Country of inventors | Number of inventors | Share of inventors | Cumulated share | Share of addresses allocated to URA | Share of addresses allocated to NUTS3 (EU countries) |
|----------------------|---------------------|--------------------|-----------------|---|---|
| CN | 18,512,361 | 31,3% | 31,3% | 60,0% | - |
| JP | 12,647,940 | 21,4% | 52,7% | 67,8% | - |
| Unknown | 9,831,894 | 16,6% | 69,3% | 0,0% | - |
| US | 5,761,034 | 9,7% | 79,0% | 98,2% | - |
| KR | 4,349,848 | 7,4% | 86,4% | 86,2% | - |





| AND INNOVATION | POLICI STUDIES | | | | |
|---------------------------|----------------|--------|--------|-------|-------|
| DE | 2,116,297 | 3,6% | 90,0% | 97,1% | 96,9% |
| RU | 901,027 | 1,5% | 91,5% | 94,7% | - |
| TW | 898,469 | 1,5% | 93,0% | 92,4% | - |
| FR | 658,218 | 1,1% | 94,1% | 83,0% | 83,0% |
| GB | 301,650 | 0,5% | 94,6% | 93,1% | 92,9% |
| CA | 295,339 | 0,5% | 95,1% | 94,3% | - |
| IT | 262,756 | 0,4% | 95,6% | 84,6% | 79,4% |
| IN | 236,465 | 0,4% | 96,0% | 95,3% | - |
| NL | 236,404 | 0,4% | 96,4% | 98,2% | 98,2% |
| CH | 190,423 | 0,3% | 96,7% | 96,3% | 96,2% |
| SE | 173,977 | 0,3% | 97,0% | 84,1% | 83,8% |
| IL | 146,473 | 0,2% | 97,2% | 85,6% | - |
| PL | 143,842 | 0,2% | 97,5% | 98,4% | 98,0% |
| ES | 138,949 | 0,2% | 97,7% | 87,4% | 87,3% |
| AU | 120,053 | 0,2% | 97,9% | 80,1% | - |
| BR | 117,344 | 0,2% | 98,1% | 64,1% | - |
| FI | 107,527 | 0,2% | 98,3% | 97,5% | 97,3% |
| UA | 93,483 | 0,2% | 98,5% | 90,8% | - |
| BE | 90,787 | 0,2% | 98,6% | 97,8% | 97,6% |
| AT | 89,993 | 0,2% | 98,8% | 96,7% | 96,6% |
| DK | 89,354 | 0,2% | 98,9% | 90,4% | 89,6% |
| SG | 70,330 | 0,1% | 99,0% | 95,6% | - |
| RoW | 567,919 | 1,0% | 100,0% | | - |
| Total number of inventors | 59,150,156 | 100,0% | | 61,7% | |

Table 10: Number of priority patent applications according to the country of applicants

| Country of applicants | Number of patent applications with applicant from the country | Share of patent applications with applicant from the country |
|-----------------------|---|--|
| JP | 5,810,690 | 28,1% |
| Unknown | 5,119,587 | 24,8% |
| CN | 3,327,160 | 16,1% |
| US | 2,041,026 | 9,9% |
| KR | 1,581,758 | 7,7% |
| DE | 851,613 | 4,1% |
| TW | 423,951 | 2,1% |
| FR | 275,960 | 1,3% |
| RU | 240,333 | 1,2% |
| GB | 226,183 | 1,1% |
| NL | 117,804 | 0,6% |





| СН | 115,186 | 0,6% |
|-------------------------|------------|------|
| IT | 101,487 | 0,5% |
| SE | 91,825 | 0,4% |
| CA | 88,490 | 0,4% |
| AU | 61,093 | 0,3% |
| FI | 53,925 | 0,3% |
| PL | 46,200 | 0,2% |
| BR | 42,494 | 0,2% |
| ES | 42,315 | 0,2% |
| IL | 41,897 | 0,2% |
| DK | 37,504 | 0,2% |
| BE | 37,401 | 0,2% |
| AT | 36,398 | 0,2% |
| SG | 30,406 | 0,1% |
| IN | 29,685 | 0,1% |
| TR | 25,421 | 0,1% |
| UA | 23,055 | 0,1% |
| НК | 21,719 | 0,1% |
| NO | 18,057 | 0,1% |
| Total number of patents | 20,656,894 | 100% |

Table 11: Number and share of applicants according to the country of the applicants. Share of applicants allocated to URAs and NUTS3 regions

| Country of applicants | Number of applicants | Share of applicants | Cumulated share | Share of addresses allocated to URA | Share of addresses allocated to NUTS3 |
|-----------------------|----------------------|---------------------|-----------------|-------------------------------------|---------------------------------------|
| JP | 6,283,479 | 27,8% | 27,8% | 80,2% | - |
| Unknown | 5,367,580 | 23,8% | 51,6% | | - |
| CN | 3,642,558 | 16,1% | 67,8% | 89,1% | - |
| US | 2,209,343 | 9,8% | 77,6% | 98,6% | - |
| KR | 1,667,166 | 7,4% | 84,9% | 67,8% | - |
| DE | 879,819 | 3,9% | 88,8% | 89,0% | 88,9% |
| TW | 438,804 | 1,9% | 90,8% | 71,8% | - |
| FR | 299,716 | 1,3% | 92,1% | 78,3% | 78,1% |
| RU | 254,707 | 1,1% | 93,2% | 35,3% | - |
| GB | 238,296 | 1,1% | 94,3% | 77,9% | 76,0% |
| NL | 122,247 | 0,5% | 94,8% | 91,6% | 91,6% |
| СН | 118,775 | 0,5% | 95,4% | 94,2% | 94,1% |
| IT | 105,883 | 0,5% | 95,8% | 90,5% | 90,4% |
| SE | 94,336 | 0,4% | 96,3% | 92,5% | 92,5% |
| CA | 94,151 | 0,4% | 96,7% | 87,5% | - |





| | | | i de la companya de | | i i |
|----------------------------|------------|--------|---|-------|-------|
| AU | 64,764 | 0,3% | 97,0% | 73,6% | - |
| FI | 56,903 | 0,3% | 97,2% | 97,9% | 97,9% |
| PL | 49,805 | 0,2% | 97,4% | 64,8% | 64,1% |
| BR | 48,829 | 0,2% | 97,6% | 52,7% | - |
| ES | 47,533 | 0,2% | 97,9% | 78,5% | 78,4% |
| IL | 47,218 | 0,2% | 98,1% | 85,8% | - |
| BE | 40,015 | 0,2% | 98,2% | 91,4% | 91,2% |
| DK | 38,867 | 0,2% | 98,4% | 92,0% | 91,4% |
| AT | 37,353 | 0,2% | 98,6% | 87,8% | 87,8% |
| SG | 32,457 | 0,1% | 98,7% | 96,7% | - |
| IN | 31,466 | 0,1% | 98,9% | 90,5% | - |
| TR | 26,739 | 0,1% | 99,0% | 51,3% | - |
| RoW | 229,370 | 1,0% | 100,0% | | |
| Total number of applicants | 22,568,179 | 100,0% | | 63,1% | |

2.5 Quality and accuracy of data

Checking the data quality is not carried out on the initial PATSTAT raw data but on the further improvements done at LISIS to produce RISIS Patent. It includes tests of completedness and consistency.

Tests of completedness

- 1- Patent applications without any information on applicants (all applicants)
 All patent applications of RPD have at least one applicant. If there were patents without any information on at least one applicant in the initial database and if no information was completed during the enrichment steps, such priority patents were not included in RPD
- 2- Patent applications with legal applicants without any information on inventors nor IPC codes

Table 12: Share of priority patent applications with legal applicants without any information on inventors or IPC codes according to the patent office for the 25th largest patent offices

| Patent office | Number of patent applications | Share of patent applications with at least one inventor | Share of patent applications with ipc information |
|---------------|-------------------------------|---|---|
| Total | 20,656,894 | 98,40% | 98,20% |
| CN | 8,034,493 | 99,97% | 99,75% |
| JP | 5,214,992 | 99,99% | 99,83% |
| US | 2,534,379 | 99,90% | 99,53% |
| KR | 1,696,261 | 99,99% | 99,24% |
| DE | 726,530 | 97,11% | 99,95% |





| EP | 328,008 | 97,68% | 99,53% |
|----|---------|--------|--------|
| GB | 305,440 | 25,76% | 35,68% |
| WO | 305,437 | 99,81% | 99,34% |
| RU | 287,777 | 99,04% | 99,69% |
| TW | 270,273 | 97,01% | 98,59% |
| FR | 223,880 | 99,34% | 99,73% |
| IT | 114,231 | 98,67% | 44,44% |
| AU | 79,318 | 71,82% | 78,23% |
| PL | 45,934 | 99,74% | 99,45% |
| BR | 42,482 | 99,71% | 98,89% |
| IN | 36,576 | 99,55% | 98,50% |
| SE | 35,180 | 98,69% | 98,07% |
| ES | 29,644 | 99,75% | 99,81% |
| NL | 29,109 | 99,69% | 99,80% |
| FI | 24,594 | 98,18% | 96,36% |
| UA | 22,977 | 98,08% | 92,21% |
| TR | 22,840 | 98,50% | 94,11% |
| AT | 19,793 | 54,15% | 96,72% |
| CA | 19,274 | 97,32% | 99,39% |
| СН | 18,959 | 98,83% | 99,80% |
| DK | 18,044 | 99,29% | 99,76% |

^{*} appln_id not in table rpd_inventors

3- Patent applications with missing country of the inventors' or missing geocoded address of inventors

For 2/3 of the inventors, the country is identified either in the priority patent, a subsequent patent of the same Inpadoc family in Patstat or other patent ressources (step 1). For 0,03% of the inventors, the country can be allocated after the geocoding and further geographical allocation steps using Cortext facilities (situation where the initial inventors' addresses include an address but where the country information cannot be isolated because it is missing or not recognized during the automated process). When still missing, the country of the applicant is allocated to the inventor' when the patent is also applied in the country of the applicant (16% of the inventors' country allocation).

The allocation of geographical information (country or URA) to patent inventors drastically varies according to the patent offices. The completed assignment of all the patent inventors is satisfying in most of the EU countries (except the United Kingdom) and the US but cannot be properly done for patents applied in China, Japan or Brazil.

Selecting priority patents with further subsequent extensions allows to significantly reduce the share of patents where inventors' allocation is missing. The share of unassigned

^{**} appln id not in table rpd technological classification





countries among the inventors drops from 16% to 1% when selecting transnat or 2ip5 priority patents; the share of unassigned URA among the inventors decreases from 38% to 12%.

Table 13: Assignment of the country of inventors: numbers and shares

| Source of the inventors' country assignement | Number of inventors' addresses | Share of inventors' addresses | |
|--|--------------------------------|-------------------------------|--|
| Initial Patstat data (priority or inpadoc family) or other data sources (step 1) | 39,958,215 | 67,55% | |
| Country allocation based on geocoded information (step 2) | 18,339 | 0,03% | |
| Country assigned based on applicant and patent office data (step 3) | 9,341,708 | 15,79% | |
| Unknown | 9,831,894 | 16,62% | |

Table 14: Share of priority patent applications with information on the country of the inventor or with geocoded address of inventors according to the patent office for the 25th largest patent offices

| Patent office | Number of patent applications | Share of patents without any information of the inventors* | Share of patents with unassigned countries among the inventors' addresses (after step1)** | Share of patents with unassigned countries among the inventors' addresses (after step3)** | Share of patents with unassigned URA among the inventors' addresses** | Total share of patents with unassigned countries among inventors' addresses** | Total share of patents with unassigned URA among inventors' addresses** |
|---------------|-------------------------------|--|---|---|---|---|---|
| Total | 20,656,894 | 1,6% | 36,6% | 15,8% | 47,8% | 17,4% | 49,4% |
| CN | 8,034,493 | 0,0% | 78,4% | 49,3% | 78,9% | 49,3% | 78,9% |
| JP | 5,214,992 | 0,0% | 15,6% | 0,4% | 48,1% | 0,4% | 48,1% |
| US | 2,534,379 | 0,1% | 1,0% | 0,4% | 6,9% | 0,5% | 7,0% |
| KR | 1,696,261 | 0,0% | 13,0% | 2,2% | 23,8% | 2,2% | 23,8% |
| DE | 726,53 | 2,9% | 0,2% | 0,1% | 6,1% | 3,0% | 9,0% |
| EP | 328,008 | 2,3% | 0,3% | 0,3% | 9,7% | 2,6% | 12,0% |
| GB | 305,44 | 74,2% | 0,2% | 0,1% | 1,7% | 74,3% | 75,9% |
| WO | 305,437 | 0,2% | 0,9% | 0,9% | 6,1% | 1,1% | 6,3% |
| RU | 287,777 | 1,0% | 17,5% | 15,1% | 20,2% | 16,1% | 21,1% |
| TW | 270,273 | 3,0% | 0,4% | 0,2% | 14,6% | 3,2% | 17,6% |
| FR | 223,88 | 0,7% | 0,3% | 0,0% | 34,0% | 0,7% | 34,7% |
| IT | 114,231 | 1,3% | 38,3% | 19,4% | 41,4% | 20,7% | 42,7% |
| AU | 79,318 | 28,2% | 34,9% | 15,0% | 35,9% | 43,2% | 64,0% |
| PL | 45,934 | 0,3% | 0,7% | 0,5% | 3,6% | 0,8% | 3,9% |
| BR | 42,482 | 0,3% | 46,5% | 3,6% | 54,5% | 3,9% | 54,8% |





| IN | 36,576 | 0,4% | 4,1% | 2,7% | 13,3% | 3,1% | 13,7% |
|----|--------|-------|-------|------|-------|-------|-------|
| SE | 35,18 | 1,3% | 26,1% | 3,7% | 38,0% | 5,0% | 39,3% |
| ES | 29,644 | 0,3% | 11,5% | 0,6% | 18,5% | 0,9% | 18,8% |
| NL | 29,109 | 0,3% | 8,0% | 3,8% | 10,2% | 4,1% | 10,6% |
| FI | 24,594 | 1,8% | 0,3% | 0,1% | 5,4% | 1,9% | 7,2% |
| UA | 22,977 | 1,9% | 9,8% | 1,9% | 10,5% | 3,8% | 12,4% |
| TR | 22,84 | 1,5% | 0,6% | 0,5% | 2,9% | 2,0% | 4,4% |
| AT | 19,793 | 45,9% | 0,6% | 0,2% | 3,3% | 46,1% | 49,1% |
| CA | 19,274 | 2,7% | 0,9% | 0,3% | 13,2% | 3,0% | 15,8% |
| СН | 18,959 | 1,2% | 0,8% | 0,3% | 7,8% | 1,5% | 9,0% |

^{*} appln_id not in table rpd_inventors

Table 15: Share of priority patent applications with information on the country of the inventor or with geocoded address of inventors according the patent value

| Patent value | Number of patents | Share of appln_id without any inventor* | Share of patents with at least one inventor without assigned country** | Total share of patents with missing information on inventors' country | Total share of patents with missing information on inventors' URA |
|--------------|-------------------|--|---|---|---|
| Transnat | 5,156,384 | 2,5% | 1,5% | 4,0% | 32,8% |
| 2ip5 | 3,567,686 | 2,0% | 1,3% | 3,3% | 35,3% |
| All | 20,656,894 | 1,6% | 20,0% | 21,6% | 38,4% |

^{*} appln id not in table rpd inventors

Table 16: Share of inventors' addresses with information on the country of the inventor or with geocoded address of inventors according the patent value

| Patent value | Number of inventors | Share of inventors without assigned country | Share of inventors without assigned URA |
|--------------|---------------------|---|---|
| Transnat | 14,325,880 | 1,2% | 11,8% |
| 2ip5 | 10,201,420 | 1,1% | 12,4% |
| All | 59,150,156 | 16,6% | 38,3% |

4- Patent applications with legal applicants with missing country of the applicants' or missing geocoded address of applicants

1/4 of the patents have unassigned country or unassigned URA for the applicants. These shares significantly vary according to the patent office.

^{**} appln_id present in rpd_inventors but none or only partial information is available to assign a country/URA to each of the patent inventors

^{**} appln_id present in rpd_inventors but none or only partial information is available to assign a country/URA to each of the patent inventors





Table 17: Share of priority patent applications with legal applicants with information on the country of the applicant or with geocoded address of applicant according to the patent office for the 25th largest patent offices

| Patent office | Number of patent applications | Share of patents with missing country information among the applicants' adresses | Share of patents with missing URA information among the applicants' adresses |
|---------------|-------------------------------|---|---|
| Total | 20,656,894 | 24,8% | 38,4% |
| CN | 8,034,493 | 59,7% | 64,8% |
| JP | 5,214,992 | 0,5% | 2,6% |
| US | 2,534,379 | 2,8% | 7,7% |
| KR | 1,696,261 | 1,3% | 12,1% |
| DE | 726,530 | 0,1% | 6,0% |
| EP | 328,008 | 0,1% | 280,2% |
| GB | 305,440 | 29,8% | 222,8% |
| WO | 305,437 | 0,2% | 11,2% |
| RU | 287,777 | 16,3% | 2,6% |
| TW | 270,273 | 0,4% | 1,6% |
| FR | 223,880 | 0,0% | 1,4% |
| IT | 114,231 | 29,0% | 3,6% |
| AU | 79,318 | 19,5% | 28,4% |
| PL | 45,934 | 0,6% | 19,6% |
| BR | 42,482 | 0,1% | 259,2% |
| IN | 36,576 | 1,3% | 6,1% |
| SE | 35,180 | 0,1% | 75,7% |
| ES | 29,644 | 2,1% | 6,0% |
| NL | 29,109 | 4,3% | 30,2% |
| FI | 24,594 | 0,1% | 366,2% |
| UA | 22,977 | 8,2% | 28,7% |
| TR | 22,840 | 0,7% | 13,4% |
| AT | 19,793 | 0,2% | 90,1% |
| CA | 19,274 | 0,3% | 166,8% |
| СН | 18,959 | 0,4% | 63,2% |
| DK | 18,044 | 0,2% | 1,5% |

Tests of consistency

1- Priority patents





We now rely on earliest_filing_id now provided in Patstat to define priority patent application. It is more reliable than our own methodology to avoid to miss some linkages with priorities.

2- Geocoding of the addresses of inventors

We compare the country of the inventors given in the RISIS patent database with the country attributed to the inventor after the geocoding step. When the 2 countries are known for a given address (in 62% of the total 59,150,156 addresses), the country is the same for in 97,40% of the addresses. After a careful manual checking of these country discrepancies, we have selected the correct country in "'country final enriched'".

3 Technical Specifications

3.1 Information on the data base system

Current data base system used

The current data base system is My SQL 5.1.63 with MyISAM as the default storage engine. In term of maintainability and backup, the main advantage of this storage engine is to use three different files for each table of a database:

- the data file has a .MYD (MYData) extension;
- the index file has a .MYI (MYIndex) extension;
- the structure file has a .frm extension.

MySQL is optimized for an intensive usage: a high level of accessibility and efficiency, for a low amount of users

Planned future technical changes concerning data base system

None

3.2 Technical variable definition

Variables present in PATSTAT raw data are defined below.

Table 14: Name and definition of the variables already present in PATSTAT and included in RISIS Patent

| APPLN_ID | Application unique identifier |
|------------|---|
| APPLN_KIND | Kind of Application |
| | □□□A patent |
| | ☐ _W PCT application (in the international phase) |
| | ☐ _T used by some offices (e. g. AT, DE, DK, ES, GR, HR, PL, PT, SI, SM, TR) for applications which |





| AND INNOVATION POLICE STUDIES | are "translations" of granted PCT or EP |
|-------------------------------|--|
| | applications |
| | □ _P provisional application (US only) |
| | □ _F design patent |
| | □ _D2, D3 artificial |
| | □ _Other "exotic" kind codes |
| APPLN_NR | Application number |
| | Number issued by the Patent Authority where the National, International or Regional application was filed |
| APPLN_AUTH | Office where the patent was applied |
| APPLN_ABSTRACT | Abstract of the application |
| APPLN_TITLE | Title of application |
| APPLN_ABSTRACT_LG | Language of abstract of application |
| APPLN_TITLE_LG | Language of title of application |
| DOCDB_FAMILY_SIZE | Size of DOCDB simple family of a given application |
| DOC_STD_NAME | Standardised name as recorded in DOCDB |
| | Standard name attributed to applicant and inventor names for inclusion in DOCDB. It is not 100% certain that the DOCDB standardised names are always linked with the correct person name, in particular if the person information came from a source other than DOCDB. This is especially true for names in USPTO patents. In case DOCDB does not provide a DOCDB standardized name, this attribute will contain the same data as the attribute PERSON_NAME. |
| DOC_STD_NAME_ID | ID for the DOCDB standardized name |
| EARLIEST_FILING_DATE | Date of the earliest filing |
| | The earliest date of the filing dates of the application itself, its international application, its Paris Convention priority applications, the applications with which it is related via technical relations and its application continuations. Only directly related applications are considered; this is unlike the INPADOC family, where applications might also be indirectly related. |
| EARLIEST_FILING_YEAR | Year of the earliest filing date |
| EARLIEST_PUBLN_YEAR | Year of the earliest publication date of an application |
| GRANTED | Granted indicator |





| AND INNOVATION POLICY STUDIES | |
|-------------------------------|--|
| | "1" if there exists a publication of the grant; "0" otherwise |
| IPC_CLASS_SYMBOL | IPC classification symbol (IPC 8th edition) |
| | Classification symbol according to the International Patent Classification, eights edition (entered into force January 1, 2006) |
| NB_CITING_DOCDB_FAM | Number of forward citations on family level |
| DEDEON ID | Number of distinct DOCDB simple families citing at least one of the publications or applications of the DOCDB simple family of the current application |
| PERSON_ID | Person identification |
| PERSON_NAME | Person name |
| PSN_ID | ID for the PATSTAT standardized name |
| PSN_NAME | PATSTAT standardized name |
| | The attribute is populated for all persons. Names of persons which have not been harmonized are just copied from the attribute PERSON_NAME. |
| PSN_SECTOR | Sector of the applicant |
| PSN_SECTOR | INDIVIDUAL ; COMPANY ; UNKNOWN ; GOVERNMENT ; NON-PROFIT ; UNIVERSITY ; HOSPITAL |
| DUDI N. ALITU | Publication Authority or Publishing office |
| PUBLN_AUTH | Patent Authority that issued the publication of the application |
| PUBLN_CLAIMS | Indicator of the number of claims in the given publication |
| PUBLN_DATE | Publication date |
| | Date on which the publication was made available to the public |
| PUBLN_KIND | Kind of Publication |
| | Publication kind attributed by the Patent Authority issuing the publication |
| PUBLN_LG | Publication language |
| PUBLN_NR | Publication number |
| | Number given by the Patent Authority issuing the |





publication

Table 15: Name and definition of the variables added in RISIS Patent (non included in PATSTAT or modified)

| adr_final | Addresses of inventors and applicants | Completed | |
|-----------------------------|---|--------------------|-----|
| lso_ctry | Addresses of inventors and applicants (country) | Completed | |
| Ctry_final_enrich | Addresses of inventors (enriched country) | Completed | |
| Source_ctry_final _enriched | Method for enriched inventors" country assignement | Completed | |
| Latitude | Addresses of inventors and applicants | New in provided | nfo |
| Longitude | Addresses of inventors and applicants | • | nfo |
| Rurban area code | Allocation of addresses of inventors and applicants | New in provided | nfo |
| Rurban area name | Allocation of addresses of inventors and applicants | New in provided | nfo |
| Rurban area caracteristics | Allocation of addresses of inventors and applicants | New in provided | nfo |
| NUTS3 Id | Allocation of addresses of inventors and applicants | New in provided | nfo |
| RISIS register id | ID Allocation to applicants included in RISIS registers (ORGREG, FIRMREG) | New in provided | nfo |
| RISIS register | ORGREG, FIRMREG (VICO, CHEETAH,CIB) | New in provided | nfo |
| Singleton | Priority patent without any extension | New in provided | nfo |
| Transnat | Priority patent further extended in a second country at least | New in provided | nfo |
| IP5 family | Priority patent further extended in a second country at least and applied in one IP5 patent office (info of Inpadoc family) | New in provided | nfo |
| 2_IP5 family | Priority patent further extended in a second country at least and applied in two IP5 patent office (info of Inpadoc family) | New in provided | nfo |
| Triadic | Priority patent for which the invention is protected at JPO, USPTO and JPO (info of Inpadoc family) | New in provided | nfo |
| IP5 | Priority patent for which the invention is protected at EPO, USPTO, SINO, KINO and JPO (info of Inpadoc family) | New ii provided | nfo |
| US | Priority patent for which the invention is protected at USPTO (info of Inpadoc family) | New ii provided | nfo |
| EP | Priority patent for which the invention is | New in provided | nfo |





| AND INNOVATION POLIC | protected at EPO, (info of Inpadoc family) | | |
|---|---|----------------------|------------|
| JP | Priority patent for which the invention is protected at JPO, (info of Inpadoc family) | New provided | info |
| CN | Priority patent for which the invention is protected at SINO (info of Inpadoc family) | New provided | info |
| KR | Priority patent for which the invention is protected at KINO (info of Inpadoc family) | New provided | info |
| PCT in the Inpadoc family | Priority patent for which the invention is protected using a PCT patent (info of Inpadoc family) | New provided | info |
| Number patents in docdb family | Number patent applications in docdb family (restricted family) | New provided | info |
| Number distinct offices in docdb family | Number of distinct patent offices where patents where applied for in docdb family (restricted family) | New provided | info |
| Number patents in inpadoc family | Number patent applications in docdb family (extended family) | New provided | info |
| Number distinct offices in inpadoc family | Number of distinct patent offices where patents where applied for in docdb family (extended family) | New provided | info |
| Domain | Fractional counting of priority patent on the 5 domains | New provided | info |
| Techno fields | Fractional counting of the priority patent on the 35 technological fields | New provided | info |
| Techno subfields | Fractional counting of the priority patent on the 401 technological subfields | New provided | info |
| IPC full textual description | Aggregation of the hierarchical IPC description | New provided | info |
| IPC class 4 digits | Fractional counting of the priority patent on the 615 technological 4 digits classes | New provided | info |
| Earliest publication of grant | First notification of a grant | Reshaped from PATSTA | info \T |

3.3 Description of the Entity Relationship Model

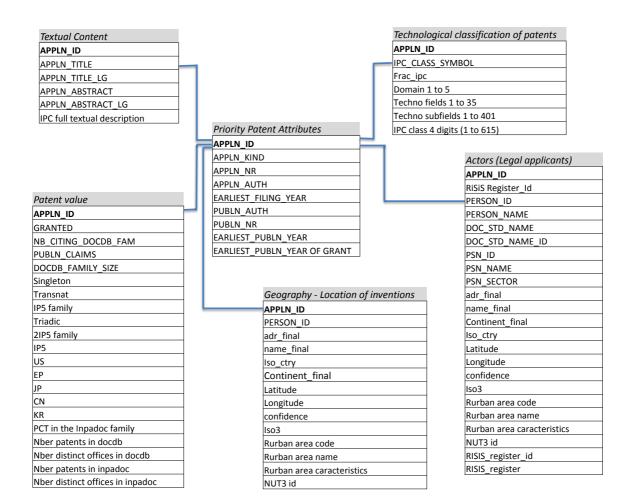
The data model of the RISIS Patent database is shown below. It includes 6 tables related using the identifier of the priority patent application (appln_id):





- Table "Priority Patent Attributes" gives a set of information related to the patent application and publication places and dates,
- Table "Textual Content" includes the pieces of textual information useful for text mining. It aims at defining the core of the protected inventions beside the predefined technological classifications
- Table "technological classification of patents" relates patent to technology on a fractional counting based using existing classification built on IPC codes
- Table "Patent value" proposes several indicators to estimate the patent application value
- Table "Geography Location of inventions" informs on the locations of the inventions based on the inventors' addresses.
- Table "Actors" focuses on the institutions that patent and give information on their type, name and location.

Table 16: Data model of RISIS Patent



The data model of the PATSTAT2021 database in shown in Appendix 5.





3.4 Interfaces for access and to other infrastructures

RISIS Patent will be interlinked with the RISIS organisation registers, i.e. the firm register (FirmReg), and public sector (org register id of institutions). Furthermore, the database is designed to comply with RISIS integrative dimensions, actors, space as described in the following.

Geocoding and allocation to rurban areas

Geocoding is done on inventors and applicants using the CORTEXT geocoding tools (see specific documentation on the CORTEXT Platform). It provides for each inventor and applicant it geo-coordinates. The % of addresses that can be geocoded is very high (around 98%), but the issue is to have addresses, and we face here a critical issue for the PATSTAT database.

We focus here on inventor addresses, i.e. pieces of detailed geographical information enabling address geocoding (city, county, street, ...). There are multiple strategies by firms where to take their patents. We thus do not use the address of applicants for analysing the geography of inventions. We focus on the addresses of inventors. Their presence and quality varies depending upon offices. For instance a study done by SPRU in the early 2000s demonstrated that the USPTO could not be trusted for addresses of inventors for patents taken elsewhere and extended to the US.

The raw coverage of addresses in PATSTAT for priority patents is limited and it has been a preoccupation by numerous teams to increase it.

We process data with the following steps to improve the address coverage:

- We first retrieve addresses that are not locate in the adequate item in PATSTAT (addresses retrieved from natural or doc standardised names) (step 1-a)
- We incorporate external resources available: REGPAT from OECD, addresses provided for by INPI, Japanese addresses (thanks to colleagues in Japan) (step 1b)
- For priority patents still without addresses, we then look into the Inpadoc family to look for inventors and addresses with specific rules linked to proximity non-US patents (step 1-c)
- We geocode and allocate URA addresses using the CORTEXT geographical modules. If a country is assigned after geocoding to a previously empty country address, we keep it (step 2).
- For priority patents still without countries, we allocate the country of the applicant to the inventor if the country of the applicant is the country where the patent was applied for (ctry_applt=appln_auth) (step 3)

Actors





We deal with actors that are legal applicants (individual applicants were discarded from the database in RISIS Patent. In the current RISIS Patent database, we only rely on the sectorial information provided in the raw PATSTAT database⁹.

Among the 59 million inventors, the geographical location (country assignment) was identified for 83% of them and for 61% of them, the addresses were geocoded and assigned to an URA (Urban and Rural Area). Among the 22 million applicants, the geographical location (country assignment) was identified for 76% of them and for 63% of them, the addresses were geocoded and assigned to an URA. Details are given above in the documentation in Tables 8 to 17.

Integration with RCF

The current RISIS Patent is made available for access to researchers in RISIS is foreseen to be fully incorporated in RCF, under the condition of controlled access and that security of usage is given (i.e. access for selected users with a concrete research project to the parts of the dataset needed for the research). Linking to other datasets in the RCF will be realized via the RISIS registers (providing the respective identifiers to the registers in RISIS Patent). Technical issues for incorporation of RISIS Patent into RCF (e.g. database system, how can a user access which parts of the dataset, etc.) are to be defined in close cooperation with WP4 beginning with autumn.

4 Scientific use and main references

RISIS Patent is an accessible and rich data source via RISIS for research activities in the production of knowledge using patent data. It allows studying the dynamics of knowledge creation along different dimensions: space, actors and technologies.

Thanks to its links with other RISIS facilities, Risis Patent enables to access to these dimensions at a coarse level or at a fine grained level using either usual classification (for technologies, geography) or designing ad-hoc data subsets of patents in specific topics of inventions, for a particular type of institutions in given geographical spaces.

It had been recently used to:

.Observe the distribution and location of the inventive activities of a group of European public research centres in the field of marine biotechnology (the EMBRIC project)

.Analyse the **exploitation of new knowledge** in specific industries (pharmaceutical and chemical industries), done by researchers from Universite Gustave Eiffel

⁹ Harmonizing names and allocation of assignee sectors in Patstat raw data was done by ECOOM (K.U. LEUVEN; http://www.ecoom.be/en/EEE-PPAT).





.Explore the **Inventive Productivity of Multinational Firms** using non parametric modelling (Conditional Efficiency Analysis)

.Analyse the internationalisation of applied knowledge production with a focus on special countries (Israel, central European countries)

.Analyse **the knowledge** production in worldwide Metropolitan Areas (Universite Gustave Eiffel team)

.Analyse **the knowledge** production specialization in EU NUTS regions University (Vilnius University)

Recent References

Laurens, P., Toma, P., Schoen, A. *et al.* How does Internationalisation affect the productivity of R&D activities in large innovative firms? A conditional nonparametric investigation. Quality and Quant ity (April 2022). https://doi.org/10.1007/s11135-022-01391-z

Patricia Laurens, Antoine Schoen, Philippe Laredo, International Patents: the role of large multinational firms in building competitive metropolitan areas, RISIS #6 Policymaker Session, 3th December 2020 (hal-03289712)

Patricia Laurens, Lionel Villard, Antoine Schoen, Philippe Laredo. The artificial patents in the PATSTAT database: how much do they matter when computing indicators of internationalisation based on worldwide priority patents?. Scientometrics, Springer Verlag, 2018, 114, pp.91-112. (10.1007/s11192-017-2578-5). (hal-01671905)

Laurens, P., Le Bas, C., Schoen, A. (2018), Worldwide IP coverage of patented inventions in large pharma firms: to what extent do the internationalisation of R&D and firm strategy matter?

Submitted to the International Journal of Technology Management

Laurens, P., Le Bas, C., Lhuillery S., Schoen, A., (2018) Firm specialisation in clean energy technologies: the influence of path dependence and technological diversification. Revue d'économie Industrielle, n°164 (4eme trimestre 2018)

"Evolving technological capabilities of firms; Complexity, divergence, and stagnation" Antoine Schoen Patricia Laurens, Alfredo Yegros, Philippe Laredo STI conference Paris September, 2017

Gaston Heimeriks, Antoine Schoen, Patricia Laurens, Alfredo Yegros and Dieter Franz Kogler

Knowledge, networks and proximities - An analysis of knowledge dynamics in the Chemical and Pharmaceutical and Biotechnology sectors Eu-spri 2018 conference Paris 2018





Laurens Patricia, Antoine Schoen, Pierluigi Toma and Cinzia Daraio Exploring the Innovative Efficiency of Big Multinational Firms through Conditional Efficiency Analysis STI 2018, Leiden (Netherlands) 12-14 September





































Appendix







Appendix 1: Artificial patents

The very first filing of a patent application that aims at protecting a novel invention, also known as a priority patent, is considered as a promising type of document for analysing the dynamics of knowledge creation in the field of technology (de Rassenfosse et al., 2013).

If most of the worldwide priority patent applications included in the PATSTAT database are the published patents, there is an additional group of patents, classified as « artificial patents » that are not part of the EPO database. The artificial priority patents are priority patents cited in further patent extensions included in the PATSTAT database but for these patents the application was not identified with 100% certainty by EPO.

An artificial priority patent in its original state contains very scarce information. The only information included in the Patent database provided by EPO for these documents relates to the patent office where the artificial priority patent has been applied for, the date and the type of the application and whether the patent has been cited as a priority patent or through another type of citation. All the other information, which is usually included in fully documented patent documents, is missing: the technology domains, the inventors' and applicants' addresses and names, the title and the abstract of the patent application.

In RISIS Patent, we fill both the applicants' and the inventors' names and addresses but also of IPC codes in the artificial priority patents based on the identification and use of this piece of information retrieved from a non artificial patent belonging to the same INPADOC family (Laurens et al., 2018). To select the candidate from which information is retrieved, a set of sequential rules is defined in order to select a candidate patent as close as possible to the artificial one. The criteria relate to the type of information available in the candidate patent, the nature of the priority link between the artificial patent and the selected candidate patent, the time lag between the two applications and the patent offices. In order to be considered as a potential candidate, the patent must contain information concerning addresses, either the inventors' addresses or the applicants' addresses or both. A candidate with a direct priority link with the artificial patents is selected first (from table tls204 of the PATSTAT database). In absence of such a link, a candidate with a direct continuity link is selected (continuation, division/continuation in parts/internal continuities in table tls 216). At last, candidate patents with indirect links are selected. Besides the type of links, we also consider the time lag between the artificial and the candidate patents. For two candidates with the same link, we select the candidate with a date of filing closest to the filing date of the artificial patent (the maximum authorised time lag is fixed to five years). Finally, we give a higher priority to US candidates to fill US artificial patents. For non US artificial patent applications, candidates filed as PCT, or EP, JP, FR, DE received the highest priority. A schematic view of the rules of selection of candidates chosen for replenishing artificial patents is presented in figure A1.

As soon as a candidate patent is selected, its information related to the names and addresses and the IPC codes is used to fill the artificial patent. This procedure made possible to propagate information from a candidate patent in 99.3% of the artificial priority patents filed between 1995 and 2010

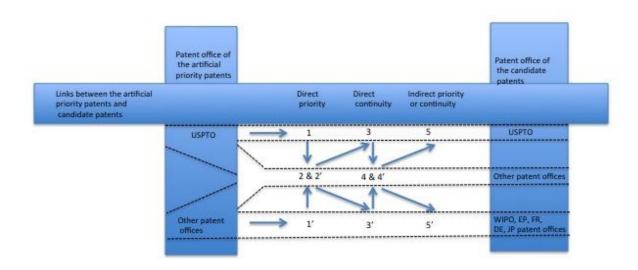
These high retrieval percentages show that the filling step of artificial patents was very effective. It thus provides a better coverage of the overall inventive activities when using the priority patents, in particular in patent offices where the share of artificial patents is





high (EPO, USPTO patent offices in India or Australia).

Figure A1: Schematic description of the different steps to fill inventors' and applicants' addresses in artificial priority patents.



Scripts are shown in https://gitlab.com/cortext/patents/patstat/-/tree/version-2021/version_2021/artificial_patents

References:

de Rassenfosse, G., Dernis, H., Guellec, D., Picci, L., van Pottelsberghe de la Potterie, B. (2013). The worldwide count of priority patents: a new indicator of inventive activity. Research Policy 42, 720-737.

Patricia Laurens, Lionel Villard, Antoine Schoen, Philippe Laredo. The artificial patents in the PATSTAT database: how much do they matter when computing indicators of internationalisation based on worldwide priority patents?. Scientometrics, Springer Verlag, 2018, 114, pp.91-112. (10.1007/s11192-017-2578-5). (hal-01671905)

CorTexT Manager:

Breucker P., Cointet J., Hannud Abdo A., Orsal G., de Quatrebarbes C., Duong T., Martinez C., Ospina Delgado J.P., Medina Zuluaga L.D., Gómez Peña D.F., Sánchez Castaño T.A., Marques da Costa J., Laglil H., Villard L., Barbier M. (2016). CorTexT Manager (version v2). URL: https://docs.cortext.net

@software{cortext_manager_v2_bibtex,

keywords = {natural language processing, social network analysis, geospatial analysis, descriptive statistics, scientometrics, biliometrics},





author = {Breucker, Philippe and Cointet, Jean-Philippe and Hannud Abdo, Alexandre and Orsal, Guillaume and de Quatrebarbes, Constance and Duong, Tam-Kien and Martinez, Cristian and Ospina Delgado, Juan Pablo and Medina Zuluaga, Luis Daniel and Gómez Peña, Diego Fernando and Sánchez Castaño, Tatiana Andrea and Marques da Costa, Joenio and Laglil, Hajar and Villard, Lionel and Barbier, Marc},

```
month = {10},
title = {CorTexT Manager},
url = {https://docs.cortext.net},
year = {2016}
}
```

Villard, Lionel & Ospina, Juan Pablo (2018). *CorText Geocoding service*, ESIEE Paris, Paris-Est University. https://docs.cortext.net/geocoding-addresses/

Villard, Lionel, Opsina, Juan Pablo & Medina, Luis Daniel (2019). *CorText Geospatial Exploration Tool.* ESIEE Paris, Paris Est University. https://docs.cortext.net/cortext-geospatial-exploration-tool/





Appendix 2: Type of applicants

One of the main goals in our research activities is the study and analysis on the dynamics of R&D and innovations made by legal entities, such as corporations, universities, research centers and in general every class of entity that do not fit into the categorization of "natural person". Considering the above, we have worked with the data contributed by PATSTAT to start with the data restructuring in order to begin on the classification process, in this way we have defined two entities classes: "legal" and "person". A third one "unknown" contains the cases where it was not possible to allocate a type to the applicant.

In the entities that can be found within the PATSTAT applicants coexist a large proportion of homonym names, for instance, the word 'Ford' may be tagged as a company or as an individual, which means that, using a direct approach of detection where several functions that implement gazetteers and by combing regular expressions, could lead in a low quality results for the categorization of legal entities and individuals. Another ambiguity that we had to face was for companies names that do not have any corporate ending and consequently is not likely that we are able to label those entities with just a dictionary list of legal suffix.

Therefore, we turn the approach of the solution, instead of merely doing a direct match of terms we used a heuristic approach in the patent context in order to separate the different entities into three subsets named as 'probably legal', 'probably individual' and 'ambiguous'. The allocation of each entity is designated by a series of methods and rules that are relay on not only on the use of gazetteers but on the characterization of the applicants through the relation with the patent, besides some simple lexical identifiers.

We then compare our allocation of the applicant type with the one available in the Patstat raw data (psn_secor). If the 2 allocations converge, we keep this type as a final allocation type of applicant. If not, we manually examine the set of applicants and allocate the most appropriate type (we were rather generous and allocate a legal type in case of doubt. We are aware that individual are still be present in particular when type UGE is """legal' and 'psn sector is 'Individual'.

At the end of the process, only applicants with a final_UGE_type set to legal were included in the table RPD_actor.

Table A-2: Final allocation of the applicant type

| | mar and carerr or and approant type | 1 | 1 |
|----------|--|----------|-------------------|
| Type_UGE | psn_sector | count(*) | final UGE_type |
| NULL | NULL | 1842 | legal |
| NULL | п | 27 | legal |
| | 'COMPANY' | 37 | individual |
| NULL | 'INDIVIDUAL' | 7082 | individual |
| NULL | 'UNKNOWN' | 203 | individual |
| 'legal' | п | 154 | individual |
| 'legal' | 'COMPANY' | 7692509 | legal |
| 'legal' | 'COMPANY GOV NON-PROFIT' | 50602 | legal |
| 'legal' | 'COMPANY GOV NON-PROFIT UNIVERSITY' | 556 | legal |
| 'legal' | 'COMPANY HOSPITAL' | 2278 | legal |





| ANDIMINOVA | ATION POLICE STUDIES | | * |
|------------|--|---------|--------|
| 'legal' | 'COMPANY INDIVIDUAL' | 4 | legal |
| 'legal' | 'COMPANY UNIVERSITY' | 1909 | legal |
| 'legal' | 'GOV NON-PROFIT' | 283713 | legal |
| 'legal' | 'GOV NON-PROFIT HOSPITAL' | 6 | legal |
| 'legal' | 'GOV NON-PROFIT UNIVERSITY' | 16876 | legal |
| 'legal' | 'HOSPITAL' | 19257 | legal |
| 'legal' | 'INDIVIDUAL' | 1432286 | legal |
| 'legal' | 'UNIVERSITY' | 178650 | legal |
| 'legal' | 'UNKNOWN' | 1243885 | legal |
| 'person' | п | 4742 | person |
| 'person' | 'COMPANY' | 116319 | legal |
| 'person' | 'COMPANY GOV NON-PROFIT' | 388 | legal |
| 'person' | 'COMPANY GOV NON-PROFIT UNIVERSITY' | 1 | legal |
| 'person' | 'COMPANY HOSPITAL' | 17 | legal |
| 'person' | 'COMPANY INDIVIDUAL' | 2 | legal |
| 'person' | 'COMPANY UNIVERSITY' | 16 | legal |
| 'person' | 'GOV NON-PROFIT' | 4834 | legal |
| 'person' | 'GOV NON-PROFIT UNIVERSITY' | 121 | legal |
| 'person' | 'HOSPITAL' | 129 | legal |
| 'person' | 'INDIVIDUAL' | 6223141 | person |
| 'person' | 'UNIVERSITY' | 2437 | legal |
| 'person' | 'UNKNOWN' | 505611 | person |

Final results are shown in Table 1

We are currently matching RPD applicants' names with legal entities names included in RISIS register (ORGREG register for EU universities and PROs) and FIRMREG register (including 3 firms data set: CIB, VICO and CHEETAH). The results of the matching with ORGREG entities is already available: among the 22.5millions of applicants, 0,79% are ORGREG entities. They have applied for 156,132 patents (0,76% of RPD priority patents).

Details of the methodology are described in: https://gitlab.com/cortext/patents/patstat//tree/version-2021/version_2021/applicants_classification





Appendix 3: Classification of patent technologies

Table A-3: Definition of the Domains, fields and subfields classification

| Label domaines | field s | Label fields | sfiel ds | Label subfields | ipc | not _ipc | not_ appl n_id |
|------------------------|------------|--|-------------|--|------|-------------|----------------------|
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T01 F01 | Lighting | F21 | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T02 F01 | Cables with Special Electric Properties | H01B | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T03 F01 | Resistors | H01C | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T04 F01 | Magnets | H01F | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T05 F01 | Capacitors | H01G | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T06 F01 | Electric Switches | H01H | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T07 F01 | Discharge Lamps | H01J | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T08 F01 | Electric Incandescent Lamps | H01K | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T09 F01 | Batteries and related | H01M | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T10 F01 | Electrically-Conductive Connections | H01R | | |
| Electrical engineering | TF0 | Electrical machinery, apparatus, energy | T11 F01 | Spark Gaps | H01T | | |
| Electrical engineering | TF0 1 | Electrical machinery, | T12 F01 | Boards For The Distribution Of Electricity | H02 | | |





| AND INNOVATI | ON POL | ICY STUDIES | | _ | | 7900 |
|-----------------|----------|---------------|-----|--------------------------------|--------|------|
| | | apparatus, | | | | |
| | | energy | | | | |
| | | Electrical | | | | |
| | | machinery, | | | | |
| Electrical | TF0 | apparatus, | T13 | | | |
| engineering | 1 | energy | F01 | Electric Heating | H05B | |
| | | Electrical | | | | |
| | | machinery, | | | | |
| Electrical | TF0 | apparatus, | T14 | Electrical Device stopping | | |
| engineering | 1 | energy | F01 | human beings | H05C | |
| originio orinig | <u> </u> | Electrical | | inaman semige | 1.000 | |
| | | machinery, | | | | |
| Electrical | TF0 | apparatus, | T15 | | | |
| engineering | 1 | energy | F01 | Static Electricity | H05F | |
| engineering | | Electrical | 101 | Static Electricity | 11031 | |
| | | | | | | |
| Electrical | TF0 | machinery, | T16 | | | |
| | | apparatus, | | Other subjects electricity | H007 | |
| engineering | 1 | energy | F01 | Other subjects electricity | H99Z | |
| Electrical | TF0 | Audio-visual | T01 | B | 0005 | |
| engineering | 2 | technology | F02 | Displaying Advertising | G09F | |
| Electrical | TF0 | Audio-visual | T02 | | 0000 | |
| engineering | 2 | technology | F02 | Arrangements For Control | G09G | |
| Electrical | TF0 | Audio-visual | T03 | Information Storage Based | | |
| engineering | 2 | technology | F02 | Record Carrier | G11B | |
| Electrical | TF0 | Audio-visual | T04 | | H04N | |
| engineering | 2 | technology | F02 | Scanning details of television | 3 | |
| Electrical | TF0 | Audio-visual | T05 | | H04N | |
| engineering | 2 | technology | F02 | Details of television systems | 5 | |
| Electrical | TF0 | Telecommunica | T06 | | H04N | |
| engineering | 2 | tions | F02 | Television systems | 7 | |
| Electrical | TF0 | Audio-visual | T07 | Details of colour television | H04N | |
| engineering | 2 | technology | F02 | systems | 9 | |
| Electrical | TF0 | Telecommunica | T08 | | H04N | |
| engineering | 2 | tions | F02 | Colour television systems | 11 | |
| Electrical | TF0 | Audio-visual | T09 | Stereoscopic television | | |
| engineering | 2 | technology | F02 | systems | 13 | |
| Electrical | TF0 | Audio-visual | T10 | Stereoscopic colour | H04N | |
| engineering | 2 | technology | F02 | television systems | 15 | |
| Electrical | TF0 | Audio-visual | T11 | Diagnosis for television | H04N | |
| engineering | 2 | technology | F02 | systems | 17 | |
| Electrical | TF0 | Audio-visual | T12 | ayaleiiia | H04N | |
| | 2 | | F02 | Pictorial Communication | 104N | |
| engineering | | technology | | r icional Communication | 101 | |
| Electrical | TF0 | Audio-visual | T13 | Loudopoolsono Microphone | HO 4D | |
| engineering | 2 | technology | F02 | Loudspeakers Microphones | H04R | |
| Electrical | TF0 | Audio-visual | T14 | Otamanha i O t | 110.40 | |
| engineering | 2 | technology | F02 | Stereophonic Systems | H04S | |
| Electrical | TF0 | Audio-visual | T15 | | | |
| engineering | 2 | technology | F02 | Printed Circuits | H05K | |
| Electrical | TF0 | Telecommunica | T01 | | _ | |
| engineering | 3 | tions | F03 | Transmission Systems | G08C | |
| Electrical | TF0 | Telecommunica | T02 | | | |
| engineering | 3 | tions | F03 | Waveguides | H01P | |
| Electrical | TF0 | Telecommunica | T03 | | | |
| engineering | 3 | tions | F03 | Aerials | H01Q | |
| | | | | | | |





| AND INNOVATI | | | | _ | | | |
|------------------|-----|----------------|------|--------------------------------|---------|-----|--|
| Electrical | TF0 | Telecommunica | T04 | | | | |
| engineering | 3 | tions | F03 | Transmission | H04B | | |
| Electrical | TF0 | Telecommunica | T05 | | | | |
| engineering | 3 | tions | F03 | Broadcas Communication | H04H | | |
| Electrical | TF0 | Telecommunica | T06 | | | | |
| engineering | 3 | tions | F03 | Multiplex Communication | H04J | | |
| Electrical | TF0 | Telecommunica | T07 | | | | |
| engineering | 3 | tions | F03 | Secret Communication | H04K | | |
| Electrical | TF0 | Telecommunica | T08 | | | | |
| engineering | 3 | tions | F03 | Telephonic Communication | H04M | | |
| Electrical | TF0 | Telecommunica | T09 | Transmission or | H04N | | |
| engineering | 3 | tions | F03 | reproduction of documents | 1 | | |
| Electrical | TF0 | Telecommunica | T10 | | | | |
| engineering | 3 | tions | F03 | Selecting (Switches/Relays) | H04Q | | |
| Electrical | TF0 | Digital | T01 | Transmission Of Digital | | | |
| engineering | 4 | communication | F04 | Information | H04L | | |
| Electrical | TF0 | Digital | T02 | | H04N | | |
| engineering | 4 | communication | F04 | Selective content distribution | 21 | | |
| Electrical | TF0 | Digital | T03 | | | | |
| engineering | 4 | communication | F04 | Wireless Communication | H04W | | |
| | | Basic | | | | | |
| Electrical | TF0 | communication | T01 | | | | |
| engineering | 5 | processes | F05 | Basic Electronic Circuitry | H03 | | |
| Electrical | TF0 | Computer | T01 | Mechanically computed | | G06 | |
| engineering | 6 | technology | F06 | Digital Computers | G06 | Q | |
| Electrical | TF0 | Computer | T02 | · | | | |
| engineering | 6 | technology | F06 | Speech Anal. Or Synth. | G10L | | |
| Electrical | TF0 | Computer | T03 | | | | |
| engineering | 6 | technology | F06 | Static Stores | G11C | | |
| Electrical | TF0 | IT methods for | T01 | | | | |
| engineering | 7 | management | F07 | Data Processing Systems | G06Q | | |
| Electrical | TF0 | Semiconductor | T01 | | | | |
| engineering | 8 | s | F08 | Semiconductor Devices | H01L | | |
| | TF0 | | T01 | | | | |
| Instruments | 9 | Optics | F09 | Optical Elements Systems | G02 | | |
| | TF0 | | T02 | | | | |
| Instruments | 9 | Optics | F09 | Photograph Apparatus | G03B | | |
| | TF0 | • | T03 | | | | |
| Instruments | 9 | Optics | F09 | Photographic Processes | G03C | | |
| | | • | | Apparatus For Processing | | | |
| | TF0 | | T04 | Exposed Photographic | | | |
| Instruments | 9 | Optics | F09 | Materials | G03D | | |
| | TF0 | • | T05 | | | | |
| Instruments | 9 | Optics | F09 | Photomechanics of Surfaces | G03F | | |
| | TF0 | • | T06 | Photomechanical Production | | | |
| Instruments | 9 | Optics | F09 | Of Surfaces | G03G | | |
| | TF0 | 1 | T07 | - | | | |
| Instruments | 9 | Optics | F09 | Holography | G03H | | |
| | TF0 | - p | T08 | Devices Using Stimulated | | | |
| Instruments | 9 | Optics | F09 | Emission | H01S | | |
| | TF1 | C P | T01 | Measuring Length | . 10 10 | | |
| Instruments | 0 | Measurement | F10 | Thickness | G01B | | |
| otranicino | TF1 | Mododiomon | T02 | 111101111000 | 2010 | | |
| Instruments | 0 | Measurement | F102 | Measuring Distances Levels | G01C | | |
| in ou difficillo | L | MOGGGIOTICITE | 1 10 | I WOODONING DISTANCES LOVEIS | 5510 | | |





| AND INNOVATI | ON POL | CY STUDIES | | | *** | | 353 |
|---------------------|--------|-------------|------|-------------------------------|--------|-----|-----|
| | TF1 | | T03 | | | | |
| Instruments | 0 | Measurement | F10 | Multivariable Measuring | G01D | | |
| | TF1 | | T04 | | 00.5 | | |
| Instruments | 0 | Measurement | F10 | Measuring Volume Flow | G01F | | |
| mstruments | | Measurement | | Measuring volume Flow | GUIF | | |
| | TF1 | | T05 | | 0010 | | |
| Instruments | 0 | Measurement | F10 | Weighing | G01G | | |
| | TF1 | | T06 | | | | |
| Instruments | 0 | Measurement | F10 | Measuring Vibrations | G01H | | |
| | TF1 | | T07 | | | | |
| Instruments | 0 | Measurement | F10 | Optical Measurements | G01J | | |
| | TF1 | | T08 | | | | |
| Instruments | 0 | Measurement | F10 | Measuring Temperature | G01K | | |
| motiumento | TF1 | Measurement | T09 | · | COTIC | | |
| la atauna anta | | N4 | | | 0041 | | |
| Instruments | 0 | Measurement | F10 | Torque Work | G01L | | |
| | TF1 | | T10 | | | | |
| Instruments | 0 | Measurement | F10 | Testing Structures | G01M | | |
| | | | | | | G01 | |
| | TF1 | | T11 | | | N | |
| Instruments | 0 | Measurement | F10 | Chemical Physical Analyses | G01N | 33 | |
| motramonto | TF1 | Mododiomont | T12 | Measuring Speed | 00111 | 00 | |
| Instruments | | Magauramant | F10 | Acceleration | G01P | | |
| mstruments | 0 | Measurement | | Acceleration | GUIP | | |
| | TF1 | | T13 | | | | |
| Instruments | 0 | Measurement | F10 | Scanning-Probe Techniques | G01Q | | |
| | TF1 | | T14 | | | | |
| Instruments | 0 | Measurement | F10 | Measuring Electric Variables | G01R | | |
| | TF1 | | T15 | | | | |
| Instruments | 0 | Measurement | F10 | Radio Direction-Finding | G01S | | |
| motramento | TF1 | Measurement | T16 | Tradio Birection i maing | 0010 | | |
| Inatrumanta | | Magauramant | F10 | Coophysics | C01\/ | | |
| Instruments | 0 | Measurement | | Geophysics | G01V | | |
| | TF1 | | T17 | | 004144 | | |
| Instruments | 0 | Measurement | F10 | Meteorology | G01W | | |
| | TF1 | | T18 | | | | |
| Instruments | 0 | Measurement | F10 | Horology | G04 | | |
| | TF1 | | T19 | | | | |
| Instruments | 0 | Measurement | F10 | Details Of Instruments | G12B | | |
| moti amonto | TF1 | Moderation | T20 | Detaile of motivations | 0.25 | | |
| Instruments | 0 | Measurement | F10 | Other subjects nucleonics | G99Z | | |
| monuments | 0 | | 1 10 | Other subjects flucteoffics | Gaar | | |
| | | Analysis of | T04 | NA-1 | 0041 | | |
| | TF1 | biological | T01 | Material Analysis by | G01N | | |
| Instruments | 1 | materials | F11 | Chem/Phys Properties | 33 | | |
| | TF1 | | T01 | | | | |
| Instruments | 2 | Control | F12 | Control Systems in General | G05B | | |
| | TF1 | | T02 | Regulating Non Electric | | | |
| Instruments | 2 | Control | F12 | Variables | G05D | | |
| ou arriorito | TF1 | 55111151 | T03 | - Caridoloo | 2000 | | |
| Inetrumente | | Control | F12 | Pogulating Floatric Variables | G05F | | |
| Instruments | 2 | Control | | Regulating Electric Variables | GUSF | | |
| l | TF1 | | T04 | la | 0.5- | | |
| Instruments | 2 | Control | F12 | Checking Devices | G07 | | |
| | TF1 | | T05 | | | | |
| Instruments | 2 | Control | F12 | Signalling Systems | G08B | | |
| | TF1 | | T06 | | | | |
| Instruments | 2 | Control | F12 | Traffic Control Systems | G08G | | |
| monuments | TF1 | Johnson | T07 | Educational Or | 5000 | | |
| In other case seeks | 1 | Control | | | COOD | | |
| Instruments | 2 | Control | F12 | Demonstration Appliances | G09B | | |





| AND INNOVATI | | ICY STUDIES | | | | |
|---------------|----------|-----------------|-----|---------------------------|-------|-----------|
| | TF1 | | T08 | | | |
| Instruments | 2 | Control | F12 | Ciphering Apparatus | G09C | |
| | TF1 | | T09 | Railway Or Like Time Or | | |
| Instruments | 2 | Control | F12 | Fare Tables | G09D | |
| | TF1 | Medical | T01 | | | |
| Instruments | 3 | technology | F13 | Surgery-Diagnosis | A61B | |
| | TF1 | Medical | T02 | | | |
| Instruments | 3 | technology | F13 | Dentistry | A61C | |
| | TF1 | Medical | T03 | | | |
| Instruments | 3 | technology | F13 | Veterinary | A61D | |
| | TF1 | Medical | T04 | | | |
| Instruments | 3 | technology | F13 | Blood Vessel Filters | A61F | |
| | TF1 | Medical | T05 | | | |
| Instruments | 3 | technology | F13 | Furniture for Patients | A61G | |
| | TF1 | Medical | T06 | | | |
| Instruments | 3 | technology | F13 | Therapy Apparatus | A61H | |
| | TF1 | Medical | T07 | | | |
| Instruments | 3 | technology | F13 | Medical Containers | A61J | |
| | TF1 | Medical | T08 | | | |
| Instruments | 3 | technology | F13 | Methods For Sterilising | A61L | |
| | TF1 | Medical | T09 | Devices for Introducing | | |
| Instruments | 3 | technology | F13 | Media in Body | A61M | |
| | TF1 | Medical | T10 | j | | |
| Instruments | 3 | technology | F13 | Electrotherapy | A61N | |
| | TF1 | Medical | T11 | 1 7 | | |
| Instruments | 3 | technology | F13 | X-Ray Technique | H05G | |
| | TF1 | Organic fine | | | A61K | |
| Chemistry | 4 | chemistry | F14 | Cosmetic Preparations | 8 | |
| - | TF1 | Organic fine | | | | |
| Chemistry | 4 | chemistry | F14 | Use of Cosmetics | A61Q | |
| <u> </u> | TF1 | Organic fine | | | 7.0.4 | |
| Chemistry | 4 | chemistry | F14 | Organic Chemistry | C07B | A61K |
| Criorinotry | TF1 | Organic fine | | Acyclic or Carbocyclic | 00.0 | AOTA |
| Chemistry | 4 | chemistry | F14 | Compounds | C07C | A61K |
| Grioringary | TF1 | Organic fine | | - Compounds | 00.0 | AOTA |
| Chemistry | 4 | chemistry | F14 | Heterocyclic Compounds | C07D | A61K |
| Criorinotry | · | orioiriioti y | 1 | Compounds with Elts Other | 0010 | AOTK |
| | TF1 | Organic fine | T06 | Than C H Halogen O N S | | |
| Chemistry | 4 | chemistry | F14 | Se or Te | C07F | A61K |
| Chomistry | TF1 | Organic fine | | 00 01 10 | 0071 | AOTK |
| Chemistry | 4 | chemistry | F14 | Sugars Nucleotides | C07H | A61K |
| Orientistry | TF1 | Organic fine | | - Cagara radicollacs | 00711 | AOTA |
| Chemistry | 4 | chemistry | F14 | Steroids | C07J | A61K |
| On on instru | TF1 | Organic fine | | 0.010100 | 2010 | AOIN |
| Chemistry | 4 | chemistry | F14 | Combinatorial Chemistry | C40B | A C 4 1 2 |
| Officialistry | TF1 | onomian y | T01 | Compounds Of Unknown | 0700 | A61K |
| Chemistry | 5 | Biotechnology | F15 | Constitution | C07G | 4044 |
| Onemialiy | TF1 | ייין פוטופטוויט | T02 | Constitution | 507 G | A61K |
| Chemistry | 5 | Riotochnology | F15 | Peptides | C07K | 4044 |
| CHEITHSHY | TF1 | Biotechnology | T03 | Apparatus For Enzymology | CUIN | A61K |
| Chomiotry | | Riotochnology | F15 | | C12N4 | 4000 |
| Chemistry | 5 TF1 | Biotechnology | | Or Microbiology | C12M | A61K |
| Chamiata | | Diotochaola | T04 | Micro-Organisms Enzymes | CAON | |
| Chemistry | 5 | Biotechnology | F15 | Culture Media | C12N | A61K |
| Chemistry | TF1 | Biotechnology | T05 | Fermentation Or Enzyme- | C12P | A61K |





| AND INNOVAT | ION POL | ICY STUDIES | | | a weller t | | |
|---------------|---------|--------------------|------|--------------------------|------------|------|-------|
| | 5 | | F15 | Using Processes | | | |
| | | | | Measuring Processes with | | | |
| | TF1 | | T06 | Enzymes Or Micro- | | | |
| Chemistry | 5 | Biotechnology | F15 | Organisms | C12Q | | A61K |
| | | | T07 | | 0.12.0 | | 7.011 |
| Chemistry | | Biotechnology | F15 | Micro-Organisms-General | C12R | | A61K |
| Officialistry | | Diotecrinology | 1 10 | Where Organisms Ceneral | 01210 | | AOIN |
| | | | | Micro-Organisms To treat | | | |
| | TF1 | | T08 | | | | |
| Chemistry | 5 | Biotechnology | F15 | solid materials | C12S | | A61K |
| | TF1 | Pharmaceutical | T01 | | | A61K | |
| Chemistry | 6 | S | F16 | Medical Preparations | A61K | 8 | |
| | TF1 | Pharmaceutical | T02 | Therapeutic Activity Of | | | |
| Chemistry | 6 | s | F16 | Chemical Compounds | A61P | | |
| , | | Macromolecula | | • | | | |
| | TF1 | r chemistry, | T01 | | | | |
| Chemistry | 7 | polymers | F17 | Polysaccharides | C08B | | |
| Officialistry | +' | Macromolecula | 1 17 | - Orysacchariaes | OOOD | | |
| | TF1 | | T02 | | | | |
| Ob a maintum. | | r chemistry, | | Transfer and Of Dulahara | 0000 | | |
| Chemistry | 7 | polymers | F17 | Treatment Of Rubbers | C08C | | |
| | | Macromolecula | | | | | |
| | TF1 | r chemistry, | T03 | Macromol with C-to-C | | | |
| Chemistry | 7 | polymers | F17 | Unsaturated Bonds | C08F | | |
| | | Macromolecula | | | | | |
| | TF1 | r chemistry, | T04 | Macromol withouth C-to-C | | | |
| Chemistry | 7 | polymers | F17 | Unsaturated Bonds | C08G | | |
| , | | Macromolecula | | | | | |
| | TF1 | r chemistry, | T05 | Derivatives Of Natural | | | |
| Chemistry | 7 | polymers | F17 | Macromolecules | C08H | | |
| Onomiday | +' | Macromolecula | , | Madremolecules | 00011 | | |
| | TF1 | r chemistry, | T06 | Inorg Or Non-Macromolr | | | |
| Chamiatru | 7 | | F17 | | C08K | | |
| Chemistry | / | polymers | ГІ/ | Organ Subst | CUOK | | |
| | | Macromolecula | T07 | 0 | | | |
| | TF1 | r chemistry, | | Compositions Of | 0001 | | |
| Chemistry | 7 | polymers | F17 | Macromolecular Compounds | C08L | | |
| | TF1 | | T01 | | | | |
| Chemistry | 8 | Food chemistry | F18 | New Plants | A01H | | |
| | TF1 | | T02 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Treatment of Dough | A21D | | |
| | TF1 | | T03 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Preseving food | A23B | | |
| _ | TF1 | | T04 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Dairy Products | A23C | | |
| | TF1 | | T05 | , | | | |
| Chemistry | 8 | Food chemistry | F18 | Edible Oils | A23D | | |
| On on motify | TF1 | . coa oriorniony | T06 | | , ,_00 | | |
| Chemistry | 8 | Food chemistry | F18 | Coffee and Tea | A23F | | |
| Onemialiy | TF1 | i ood dilelilistiy | | Conee and rea | 74J | | |
| Chamiata | | Food oborstates | T07 | Chapalata | A 22C | | |
| Chemistry | 8 | Food chemistry | F18 | Chocolate | A23G | | |
| | TF1 | | T08 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Proteins for Food | A23J | | |
| | TF1 | | T09 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Fodder | A23K | | |
| | TF1 | | T10 | | | | |
| Chemistry | 8 | Food chemistry | F18 | Other Foods | A23L | | |
| | • | | | 11 | • | | |





| TF1 | AND INNOVAT | | CY STUDIES | | | | |
|---|--------------|-----|--------------------|-----|------------------------------|--------|--|
| The characteristic | | TF1 | | T11 | | | |
| Chemistry 8 Food chemistry F18 Fermented Solutions C12F Chemistry 8 Food chemistry F18 Alcoholic Beverages C12G Chemistry 8 Food chemistry F18 Beverages C12H Chemistry 8 Food chemistry F18 Beverages C12J Chemistry 8 Food chemistry F18 Vinegar C12J Chemistry 8 Food chemistry F18 Production of sugar juices 10 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar juices 20 Chemistry 8 Food chemistry | Chemistry | | Food chemistry | | Brewing Of Beer | C12C | |
| The content of the | | | | | | | |
| Chemistry 8 Food chemistry F18 Alcoholic Beverages C12G Chemistry 8 Food chemistry F18 Beverages C12H Chemistry 8 Food chemistry F18 Beverages C12J Chemistry 8 Food chemistry F18 Production of sugar juices 10 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar sugar C13B Chemistry 8 Food chemistry F18 Drying sugar 40 Chemistry 8 Food chemistry </td <td>Chemistry</td> <td></td> <td>Food chemistry</td> <td></td> <td>Fermented Solutions</td> <td>C12F</td> <td></td> | Chemistry | | Food chemistry | | Fermented Solutions | C12F | |
| TF1 | | | | | l <u>-</u> | | |
| Chemistry 8 Food chemistry F18 Beverages C12H Chemistry 8 Food chemistry F18 Vinegar C12J Chemistry 8 Food chemistry F18 Production of sugar juices 10 Chemistry 8 Food chemistry F18 Production of sugar juices 20 Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Sugar C13B Chemistry 8 Food chemistry F18 Sugar | Chemistry | | Food chemistry | | | C12G | |
| TF1 | 0, | | | | | 0.4011 | |
| Chemistry 8 Food chemistry F18 Vinegar C12J Chemistry 8 Food chemistry F18 Production of sugar juices 10 Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 molasses 35 TF1 TF1 TF1 C13B C13B Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subclass C13B Chemistry 8 Food chemistry F18 Supar Juices C13B <td< td=""><td>Chemistry</td><td></td><td>Food chemistry</td><td></td><td>Beverages</td><td>C12H</td><td></td></td<> | Chemistry | | Food chemistry | | Beverages | C12H | |
| TF1 | Ola | | Faral alamaiata | | \ | 0401 | |
| Chemistry 8 Food chemistry F18 Production of sugar juices 10 Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 Working-up of sugar 40 Chemistry 8 Food chemistry F18 Working-up of sugar C13B Chemistry 8 Food chemistry F18 Working-up of sugar C13B Chemistry 8 Food chemistry F18 Subject matter not provided for in other groups of this subclass C13B Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Fo | Cnemistry | | Food chemistry | | vinegar | | |
| Chemistry | Chomistry | | Food chamistry | | Production of sugar juices | | |
| Chemistry 8 Food chemistry F18 Purification of sugar juices 20 Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 Crystallisation of sucrose from molasses C13B Chemistry 8 Food chemistry F18 Drying sugar C13B Chemistry 8 Food chemistry F18 Drying sugar C13B Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subclass 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Supars C13J Chemistry 9 Chemistry F18 Synthesis Of Sugars | Chemistry | | Food Chemistry | | Production of sugar juices | | |
| Chemistry TF1 8 Food chemistry F18 Food chemistry C13B Sood chemistry Annotation of sugar Sood chemistry Annotation of sucrose from C13B Society Annotation of Society Annotation of Society C13B Society Annotation of Society Annotation of Society C13B Society C13B Society Annotation of Society C13B Society C13F Society C13F Society | Chamietry | | Food chamistry | | Purification of sugar juices | | |
| Chemistry 8 Food chemistry F18 Crystallisation of sugar 30 Chemistry 8 Food chemistry F18 molasses 35 TF1 TF1 TC0 C13B Chemistry 8 Food chemistry F18 Drying sugar 40 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subclass 99 Chemistry 8 Food chemistry F18 Subclass 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Sugar C13J Chemistry 8 Food chemistry F18 Supthesis Of Sugars C13K Chemistry 9 chemistry< | Crieffildity | | 1 000 Chemistry | | Turnication of sugar juices | | |
| Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 Drying sugar 40 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subject matter not provided for in other groups of this C13B 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Sugar C13J Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13J Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13K Chemistry 9 Chemistry F19 Disinfectants A01N Chemistry 9 Chemistry F19 Repellants A01P Chemistry 9 Chemistry F19 Explosives C06 Chemistry 9 Chemistry F19 Dyeing Of Inorganics C09C Chemistry 9 Chemistry F19 Dyeing Of Inorganics C09C Chemistry 9 Chemistry F19 Dasic materials T05 Chemistry F19 Basic materials T05 Chemistry F19 Dyeing Of Inorganics C09C Chemistry 9 Chemistry F19 Dasin sand inks C09D Chemistry 9 Chemistry F19 Dolishing Compositions C09G Chemistry 9 Chemistry F19 Dolishing Compositions C09G Chemistry 9 Chemistry F19 Glue Or Gelatine C09J | Chemistry | | Food chemistry | | Crystallisation of sugar | | |
| Chemistry 8 Food chemistry F18 molasses 35 Chemistry 8 Food chemistry F18 Drying sugar 40 TF1 TF1 T21 C13B Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subject matter not provided for in other groups of this C13B Chemistry 8 Food chemistry F18 subclass 99 Chemistry 8 Food chemistry F18 subclass 99 TF1 TF1 T23 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar C13F TF1 TF1 T26 Synthesis Of Sugar C13J Chemistry 9 Chemistry F18 Synthesis Of Sugars C13K Chemistry 9 chemistry F19 Disinfectants A01N Chemistry 9 chemistry F19 | Chomistry | | 1 dod drieffliotry | | | | |
| Chemistry TF1 Separation TC13B Separation CC13B Separation | Chemistry | | Food chemistry | | | | |
| Chemistry 8 Food chemistry F18 Drying sugar 40 TF1 TF1 T21 C13B Chemistry 8 Food chemistry F18 Working-up of sugar 50 Chemistry 8 Food chemistry F18 Subject matter not provided for in other groups of this C13B Chemistry 8 Food chemistry F18 Subclass 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J Chemistry 8 Food chemistry F18 Extraction Of Sugars C13K Chemistry 8 Food chemistry F18 Extraction Of Sugars C13K Chemistry 9 chemistry F19 Disinfectants A01N Chemistry 9 chemistry F19 Repellants A01P < | Criorinotry | | 1 cod chomicaly | | molacoco | | |
| TF1 | Chemistry | | Food chemistry | | Drving sugar | | |
| Chemistry 8 Food chemistry F18 Working-up of sugar 50 TF1 | <u> </u> | | | | | | |
| TF1 Chemistry 8 Food chemistry F18 Subject matter not provided for in other groups of this Subclass 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D TF1 Chemistry 8 Food chemistry F18 Sugar Juices C13F TF1 Chemistry 8 Food chemistry F18 Sugar C13F TF1 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 Chemistry 9 F18 Synthesis Of Sugars C13K TF1 Basic materials Chemistry F19 Disinfectants A01N TF1 Basic materials T02 Chemistry F19 Chemistry F19 F19 Fertilisers C05 Chemistry 9 Chemistry F19 F19 Fertilisers C05 TF1 Basic materials T04 Chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry F19 Basic materials T05 Chemistry F19 Disinfectants C06 TF1 Basic materials T05 Chemistry F19 Disinfectants C06 TF1 Basic materials T06 Chemistry F19 Explosives C06 TF1 Basic materials T06 Chemistry F19 Disinfectants C09C TF1 Basic materials T07 Chemistry 9 Chemistry F19 Natural Resins C09F TF1 Basic materials T08 Chemistry F19 Olishing Compositions C09G Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Chemistry | | Food chemistry | | Working-up of sugar | | |
| Chemistry TF1 8 Food chemistry F18 F18 subclass 99 Chemistry TF1 8 Food chemistry F18 F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 F18 Sugar C13F Chemistry 8 Food chemistry F18 F18 Extraction Of Sugar C13J Chemistry 8 Food chemistry F18 F18 Synthesis Of Sugars C13K Chemistry 9 chemistry F19 F19 Disinfectants A01N Chemistry 9 chemistry F19 F19 Repellants A01P Chemistry 9 chemistry F19 F19 Fertilisers C05 Chemistry 9 chemistry F19 F19 Explosives C05 Chemistry 9 chemistry F19 F19 Dyeing Of Inorganics C09C Chemistry 9 chemistry F19 F19 paints and inks | , | | , | | ÿ . | | |
| Chemistry 8 Food chemistry F18 subclass 99 Chemistry 8 Food chemistry F18 Sugar Juices C13D Chemistry 8 Food chemistry F18 Sugar C13F Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13K Chemistry 9 chemistry F19 Disinfectants A01N Chemistry 9 chemistry F19 Repellants A01P Chemistry 9 chemistry F19 Fertilisers C05 Chemistry 9 chemistry F19 Fertilisers C05 Chemistry 9 chemistry F19 Fertilisers C05 Chemistry 9 chemistry F19 Organic Dyes C06 Chemistry <td></td> <td>TF1</td> <td></td> <td>T22</td> <td></td> <td>C13B</td> <td></td> | | TF1 | | T22 | | C13B | |
| Chemistry TF1 8 | Chemistry | 8 | Food chemistry | F18 | | 99 | |
| Chemistry 8 Food chemistry F18 Sugar C13F TF1 TF1 T25 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 TF1 T726 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 TF1 TF1 T726 Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13K TF1 Basic materials T01 Chemistry F19 Chemistry F19 Disinfectants A01N TF1 Basic materials T02 Chemistry F19 Chemistry F19 Fertilisers C05 TF1 Basic materials T03 Chemistry F19 Fertilisers C05 TF1 Basic materials T04 Chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T08 Chemistry F19 Dolishing Compositions C09G TF1 Basic materials T09 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T09 Chemistry F19 Glue Or Gelatine C09H Chemistry P19 Glue Or Gelatine C09J | | TF1 | , | T23 | | | |
| Chemistry 8 Food chemistry F18 Sugar C13F TF1 T25 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 TF1 Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 TF1 Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13K TF1 Basic materials T01 Chemistry 9 chemistry F19 Disinfectants A01N TF1 Basic materials T02 Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T03 Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T04 Chemistry 9 chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry 9 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 chemistry F19 Polishing Compositions C09G Chemistry 9 chemistry F19 Polishing Compositions C09H Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry 9 chemistry F19 Glue Or Gelatine C09J | Chemistry | 8 | Food chemistry | F18 | Sugar Juices | C13D | |
| Chemistry 8 Food chemistry F18 Extraction Of Sugar C13J TF1 | | TF1 | | | | | |
| Chemistry8Food chemistryF18Extraction Of SugarC13JChemistry8Food chemistryF18Synthesis Of SugarsC13KTF1Basic materials chemistryT01 chemistryDisinfectantsA01NChemistry9ChemistryF19DisinfectantsChemistry9ChemistryF19RepellantsChemistry9ChemistryF19FertilisersChemistry9ChemistryF19FertilisersChemistry9ChemistryF19ExplosivesC06Chemistry9ChemistryF19ExplosivesC06Chemistry9ChemistryF19Organic DyesC09BChemistry9ChemistryF19Dyeing Of InorganicsC09CChemistry9ChemistryF19Dyeing Of InorganicsC09CChemistry9ChemistryF19Paints and inksC09DChemistry9ChemistryF19Natural ResinsC09FChemistry9ChemistryF19Polishing CompositionsC09GChemistry9ChemistryF19Glue Or GelatineC09HChemistry7F1Basic materialsT10C09HChemistry7F1Basic materialsT11AdhesivesC09J | Chemistry | | Food chemistry | | Sugar | C13F | |
| Chemistry 8 Food chemistry F18 Synthesis Of Sugars C13K TF1 Basic materials T01 chemistry 9 chemistry F19 Disinfectants A01N TF1 Basic materials T02 chemistry F19 Repellants A01P Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T03 chemistry F19 Explosives C06 TF1 Basic materials T05 chemistry F19 Explosives C06 TF1 Basic materials T05 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T08 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T08 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 Basic materials T09 chemistry F19 Dyeing Of Inorganics C09F TF1 | | | | | | | |
| Chemistry8Food chemistryF18Synthesis Of SugarsC13KTF1Basic materials chemistryT01T01T01ChemistryTF1Basic materials chemistryT02T02Chemistry9ChemistryF19RepellantsA01PChemistry9ChemistryF19FertilisersC05Chemistry9ChemistryF19FertilisersC05Chemistry9ChemistryF19ExplosivesC06Chemistry9ChemistryF19Organic DyesC09BChemistry9ChemistryF19Dyeing Of InorganicsC09CChemistry9ChemistryF19Dyeing Of InorganicsC09CChemistry9ChemistryF19Paints and inksC09DChemistry9ChemistryF19Natural ResinsC09FChemistry9ChemistryF19Polishing CompositionsC09GChemistry9ChemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT10C09HChemistryTF1Basic materialsT11AdhesivesC09J | Chemistry | | Food chemistry | | Extraction Of Sugar | C13J | |
| TF1 Basic materials T01 Chemistry 9 chemistry F19 Disinfectants A01N TF1 Basic materials T02 Chemistry 9 chemistry F19 Repellants A01P TF1 Basic materials T03 Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T04 Chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry F19 Crypanic Dyes C09B TF1 Basic materials T06 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 Chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry F19 Polishing Compositions C09C TF1 Basic materials T09 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T09 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | | | | | | | |
| Chemistry9chemistryF19DisinfectantsA01NTF1Basic materialsT02A01PChemistry9chemistryF19RepellantsA01PTF1Basic materialsT03C05Chemistry9chemistryF19FertilisersC05TF1Basic materialsT04C06C06Chemistry9chemistryF19ExplosivesC06Chemistry9chemistryF19Organic DyesC09BChemistry9chemistryF19Dyeing Of InorganicsC09CTF1Basic materialsT07C09CChemistry9chemistryF19paints and inksC09DTF1Basic materialsT08C09FChemistry9chemistryF19Natural ResinsC09FChemistry9chemistryF19Polishing CompositionsC09GTF1Basic materialsT10C09GChemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT11AdhesivesC09J | Chemistry | | | | Synthesis Of Sugars | C13K | |
| TF1 Basic materials T02 Chemistry 9 chemistry F19 Repellants A01P TF1 Basic materials T03 Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T04 Chemistry 9 chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry 9 chemistry F19 Organic Dyes C09B TF1 Basic materials T06 Chemistry 9 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 Chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 Chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T09 Chemistry 9 Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T10 Chemistry 9 Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives | | | | | 5 | 4041 | |
| Chemistry9chemistryF19RepellantsA01PTF1Basic materialsT03ChemistryF19FertilisersC05TF1Basic materialsT04ChemistryF19ExplosivesC06Chemistry9chemistryF19DyesC09BChemistry9chemistryF19Organic DyesC09BChemistry9chemistryF19Dyeing Of InorganicsC09CChemistry9chemistryF19Dyeing Of InorganicsC09CChemistry9chemistryF19paints and inksC09DChemistry9chemistryF19Natural ResinsC09FChemistry9chemistryF19Notural ResinsC09FChemistry9chemistryF19Polishing CompositionsC09GChemistry9chemistryF19Glue Or GelatineC09HChemistry7F1Basic materialsT11AdhesivesC09J | Chemistry | | | | Disinfectants | A01N | |
| TF1 Basic materials T03 Chemistry 9 chemistry F19 Fertilisers C05 TF1 Basic materials T04 Chemistry 9 chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry 9 chemistry F19 Organic Dyes C09B TF1 Basic materials T06 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T09 Chemistry 9 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Ch a mainten | | | | Donallanta | A04D | |
| Chemistry9chemistryF19FertilisersC05TF1Basic materials chemistryT04 F19ExplosivesC06TF1Basic materials chemistryT05 F19C09BChemistryTF1Basic materials chemistryT06 F19Dyeing Of InorganicsC09CChemistryTF1Basic materials chemistryT07 F19C09CChemistryTF1Basic materials F19T08 F19C09DChemistryTF1Basic materials ChemistryT09 F19Natural ResinsC09FChemistryTF1Basic materials ChemistryT09 F19Polishing CompositionsC09GTF1Basic materials ChemistryT10 ChemistryC09HChemistryTF1Basic materials T10 ChemistryT11AdhesivesC09J | Chemistry | | | | Repellants | AUTP | |
| TF1 Basic materials T04 Chemistry 9 chemistry F19 Explosives C06 TF1 Basic materials T05 Chemistry 9 chemistry F19 Organic Dyes C09B TF1 Basic materials T06 Chemistry 9 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Chemistry | | | | Fortilisors | C05 | |
| Chemistry9chemistryF19ExplosivesC06TF1Basic materials chemistryT05 F19Organic DyesC09BTF1Basic materials chemistryT06 F19Dyeing Of InorganicsC09CChemistry9chemistryF19Dyeing Of InorganicsC09CChemistry9chemistryF19paints and inksC09DTF1Basic materials chemistryT08 F19C09FChemistry9chemistryF19Natural ResinsC09FChemistry9chemistryF19Polishing CompositionsC09GChemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materials paints and inksC09J | Chemistry | | | | i Gransers | 505 | |
| TF1 Basic materials T05 chemistry F19 Organic Dyes C09B TF1 Basic materials T06 Chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry F19 Polishing Compositions C09G TF1 Basic materials T09 Chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T10 Glue Or Gelatine C09J | Chemistry | | | | Explosives | C06 | |
| Chemistry9chemistryF19Organic DyesC09BTF1Basic materials chemistryT06 F19Dyeing Of InorganicsC09CTF1Basic materials chemistryT07 F19C09DChemistryF19paints and inksC09DTF1Basic materials chemistryT08 F19C09FChemistryF19Natural ResinsC09FTF1Basic materials chemistryT09 F19C09GTF1Basic materials chemistryT10 F19C09GChemistryF19Glue Or GelatineC09HChemistryTF1Basic materials F19T11AdhesivesC09J | Shormony | | | | | | |
| TF1 Basic materials T06 Chemistry 9 chemistry F19 Dyeing Of Inorganics C09C TF1 Basic materials T07 Chemistry 9 chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Chemistry | | | | Organic Dves | C09B | |
| Chemistry9chemistryF19Dyeing Of InorganicsC09CTF1Basic materialsT07C09DChemistry9chemistryF19paints and inksC09DChemistry9chemistryF19Natural ResinsC09FTF1Basic materialsT09C09FChemistry9chemistryF19Polishing CompositionsC09GTF1Basic materialsT10C09HChemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT11AdhesivesC09J | | | | | | | |
| TF1 Basic materials T07 Chemistry 9 chemistry F19 paints and inks C09D TF1 Basic materials T08 Chemistry 9 chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Chemistry | | | | Dyeing Of Inorganics | C09C | |
| Chemistry9chemistryF19paints and inksC09DTF1Basic materialsT08Chemistry9chemistryF19Natural ResinsC09FChemistry9chemistryF19Polishing CompositionsC09GTF1Basic materialsT10C09GChemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT11AdhesivesC09J | , | | | | , , , | | |
| TF1 Basic materials T08 9 chemistry F19 Natural Resins C09F TF1 Basic materials T09 Chemistry 9 chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | Chemistry | 9 | | | paints and inks | C09D | |
| TF1 Basic materials T09 Chemistry 9 chemistry F19 Polishing Compositions C09G TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | • | | | | | | |
| Chemistry9chemistryF19Polishing CompositionsC09GTF1Basic materialsT10T10Chemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT11AdhesivesC09J | Chemistry | | chemistry | F19 | Natural Resins | C09F | |
| TF1 Basic materials T10 Chemistry 9 chemistry F19 Glue Or Gelatine C09H Chemistry TF1 Basic materials T11 Adhesives C09J | | TF1 | Basic materials | T09 | | | |
| Chemistry9chemistryF19Glue Or GelatineC09HChemistryTF1Basic materialsT11AdhesivesC09J | Chemistry | 9 | | F19 | Polishing Compositions | C09G | |
| Chemistry TF1 Basic materials T11 Adhesives C09J | | TF1 | Basic materials | | | | |
| | | | | | | | |
| | Chemistry | TF1 | Basic materials | T11 | | C09J | |





| AND INNOVAT | | 1 | | _ | | |
|---------------|-----|-----------------|-----|---|-------|------|
| | 9 | chemistry | F19 | | | |
| | TF1 | Basic materials | T12 | Materials For Miscellaneous | | |
| Chemistry | 9 | chemistry | F19 | Applications | C09K | |
| | TF1 | Basic materials | | | | |
| Chemistry | 9 | chemistry | F19 | by distillation | C10B | |
| | TF1 | Basic materials | | | | |
| Chemistry | 9 | chemistry | F19 | Working-Up Tar | C10C | |
| Chomistry | TF1 | Basic materials | | Tronking op rai | 0100 | |
| Chemistry | 9 | chemistry | F19 | Working-Up Of Peat | C10F | |
| Chemistry | TF1 | Basic materials | | Working-op of Feat | C 101 | |
| Chamaintm. | | | _ | Crooking I hydrocorbon Oile | C40C | |
| Chemistry | 9 | chemistry | F19 | Cracking Hydrocarbon Oils | C10G | |
| 01 | TF1 | Basic materials | | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | 04011 | |
| Chemistry | 9 | chemistry | F19 | | C10H | |
| | TF1 | Basic materials | | Production Of Gas From | _ | |
| Chemistry | 9 | chemistry | F19 | Solid C-Material | C10J | |
| | TF1 | Basic materials | T19 | Modifying Combustible | | |
| Chemistry | 9 | chemistry | F19 | Gases Containing CO | C10K | |
| | TF1 | Basic materials | | | | |
| Chemistry | 9 | chemistry | | Fuels | C10L | |
| , | TF1 | Basic materials | | | | |
| Chemistry | 9 | chemistry | F19 | Lubrifiant | C10M | |
| Chomistry | TF1 | Basic materials | | Labinan | OTOW | |
| Chemistry | 9 | chemistry | F19 | Lubrifiant indexed | C10N | |
| Chemistry | TF1 | Basic materials | | Lubillant indexed | CTOIN | |
| Chamiatry | | | | Foto | C11D | |
| Chemistry | 9 | chemistry | F19 | Fats | C11B | |
| | TF1 | Basic materials | | | 0440 | |
| Chemistry | 9 | chemistry | F19 | Fatty Acids | C11C | |
| | TF1 | Basic materials | | | | |
| Chemistry | 9 | chemistry | F19 | Detergent Compositions | C11D | |
| | TF1 | Basic materials | T26 | | | |
| Chemistry | 9 | chemistry | F19 | Other subjects Chemistry | C99Z | |
| | TF2 | Materials, | T01 | Casting and Powder | | |
| Chemistry | 0 | metallurgy | F20 | Metallurgy | B22 | |
| ĺ | TF2 | | T02 | 3, | | |
| Chemistry | 0 | metallurgy | F20 | Inorganic Chemistry | C01 | |
| | TF2 | Materials, | T03 | game criemany | | |
| Chemistry | 0 | metallurgy | F20 | Glasses | C03C | |
| Onomistry | TF2 | Materials, | T04 | 010000 | 5555 | |
| Chamietry | | , | F20 | Pofractories | C04 | |
| Chemistry | 0 | metallurgy | | Refractories | U4 | |
| Ob a seed of | TF2 | Materials, | T05 | Matalluman et lucus | 004 | |
| Chemistry | 0 | metallurgy | F20 | Metallurgy of Iron | C21 | |
| | TF2 | Materials, | T06 | | | |
| Chemistry | 0 | metallurgy | F20 | Metallurgy | C22 | |
| | | Surface | | | | |
| | TF2 | technology, | T01 | Apparatus For Applying | | |
| Chemistry | 1 | coating | F21 | Liquids | B05C | |
| | | Surface | | | | |
| | TF2 | technology, | T02 | | | |
| Chemistry | 1 | coating | F21 | Liquid Application Processes | B05D | |
| | | Surface | | 1 | | |
| | TF2 | technology, | T03 | | | |
| Chemistry | 1 | coating | F21 | Layered Products | B32 | |
| Officialistry | TF2 | Surface | T04 | Layerea i roducio | ع د ح | |
| Chemistry | | | F21 | Coating Motallia Matarial | C23 | |
| Chemistry | 1 | technology, | ГДІ | Coating Metallic Material | UZ3 | |





| AND INNOVAT | ION POLI | | 1 | | | |
|---------------|----------|------------------|----------|----------------------------------|------|--|
| | | coating | | | | |
| | | Surface | | | | |
| | TF2 | technology, | T05 | Electrolytic Or | | |
| Chemistry | 1 | coating | F21 | Electrophoretic Processes | C25 | |
| | | Surface | | | | |
| | TF2 | technology, | T06 | | | |
| Chemistry | 1 | coating | F21 | Crystal Growth | C30 | |
| , | | Micro-structural | | | | |
| | TF2 | and nano- | T01 | | | |
| Chemistry | 2 | technology | F22 | Micro-Structural Technology | B81 | |
| Grioringary | _ | Micro-structural | | miere etraetarar reermeiegy | | |
| | TF2 | and nano- | T02 | | | |
| Chemistry | 2 | technology | F22 | Nano-Technology | B82 | |
| Officialistry | TF2 | Chemical | T01 | Trano-reciniology | D02 | |
| Chamiatry | | | F23 | Poiling | B01B | |
| Chemistry | 3 TF2 | engineering | | Boiling | DUID | |
| Ol | 1 | Chemical | T02 | 0 | DO4D | |
| Chemistry | 3 | engineering | F23 | Separation | B01D | |
| | | | T | Evaporating and extraction | D045 | |
| | TF2 | Chemical | T03 | and separetion and | B01D | |
| Chemistry | 3 | engineering | F23 | degaseification | 1 | |
| | TF2 | Chemical | T04 | | B01D | |
| Chemistry | 3 | engineering | F23 | Separation and Filters | 2 | |
| | TF2 | Chemical | T05 | | B01D | |
| Chemistry | 3 | engineering | F23 | Distillation | 3 | |
| | TF2 | Chemical | T06 | | B01D | |
| Chemistry | 3 | engineering | F23 | Regeneration of Filters | 41 | |
| | TF2 | Chemical | T07 | Separating Liquids and | B01D | |
| Chemistry | 3 | engineering | F23 | Solids | 43 | |
| | TF2 | Chemical | T08 | | B01D | |
| Chemistry | 3 | engineering | F23 | Other Separation | 57 | |
| Officialistry | TF2 | Chemical | T09 | Other Ocparation | B01D | |
| Chemistry | 3 | engineering | F23 | Separation of isotopes | 59 | |
| Chemistry | TF2 | Chemical | T10 | | B01D | |
| Chamiatur | | | | Separation apparatus and | _ | |
| Chemistry | 3 | engineering | F23 | processes | 6 | |
| 01 | TF2 | | T11 | Semi-permeable membranes | | |
| Chemistry | 3 | engineering | F23 | for separation | 7 | |
| | TF2 | Chemical | T12 | | | |
| Chemistry | 3 | engineering | F23 | Mixing | B01F | |
| | TF2 | Chemical | T13 | | | |
| Chemistry | 3 | engineering | F23 | Chem and Phys Processes | B01J | |
| | TF2 | Chemical | T14 | Chem Or Phys Lab | | |
| Chemistry | 3 | engineering | F23 | Apparatus | B01L | |
| | TF2 | Chemical | T15 | | | |
| Chemistry | 3 | engineering | F23 | Crushing and Milling | B02C | |
| , | TF2 | Chemical | T16 | | | |
| Chemistry | 3 | engineering | F23 | Separation of solid materials | B03 | |
| | TF2 | Chemical | T17 | | | |
| Chemistry | 3 | engineering | F23 | Centrifuges | B04 | |
| 2 | TF2 | Chemical | T18 | | | |
| Chemistry | 3 | engineering | F23 | Spraying | B05B | |
| On Chingley | TF2 | Chemical | T19 | Generating Mechanical | 2000 | |
| Chamiatry | | | | | BUSD | |
| Chemistry | 3 | engineering | F23 | Vibrations Congrating Colido and | B06B | |
| Ch a ! ! ! | TF2 | Chemical | T20 | Separating Solids and | DOZ | |
| Chemistry | 3 | engineering | F23 | Sorting | B07 | |





| AND INNOVATI | ION POL | ICY STUDIES | | | |
|---------------------------------------|---------|----------------|------|----------------------------|----------|
| | TF2 | Chemical | T21 | | |
| Chemistry | 3 | engineering | F23 | Cleaning | B08 |
| j | TF2 | Chemical | T22 | Chemical Processing Of | |
| Chemistry | 3 | engineering | F23 | Skins Hides Or Leather | C14C |
| - Citatinating | TF2 | Chemical | T23 | | |
| Chemistry | 3 | engineering | F23 | Treating Textile | D06B |
| Officialistry | 5 | Criginocring | 1 23 | Finishing Dressing | D00D |
| | TF2 | Chemical | T24 | | |
| Ola a maila timi. | | | | | DOCC |
| Chemistry | 3 | engineering | F23 | Textile | D06C |
| | TF2 | Chemical | T25 | | D |
| Chemistry | 3 | engineering | F23 | Bleaching | D06L |
| | TF2 | Chemical | T26 | Phase transformation Of | |
| Chemistry | 3 | engineering | F23 | Gases | F25J |
| | TF2 | Chemical | T27 | | |
| Chemistry | 3 | engineering | F23 | Drying | F26 |
| , | TF2 | Chemical | T28 | , 0 | |
| Chemistry | 3 | engineering | F23 | Plasma Technique | H05H |
| Chombay | TF2 | Environmental | T01 | Tradina rodiniquo | 110011 |
| Chemistry | 4 | technology | F24 | Fire-Fighting | A62C |
| Chemistry | TF2 | Environmental | | Fire-righting | B01D |
| Ol | | | T02 | 0 | |
| Chemistry | 4 | technology | F24 | Separating Gases | 45 |
| | TF2 | Environmental | T03 | | B01D |
| Chemistry | 4 | technology | F24 | Filtering Gases | 46 |
| | TF2 | Environmental | T04 | | B01D |
| Chemistry | 4 | technology | F24 | Separating by Liquids | 47 |
| _ | TF2 | Environmental | T05 | | B01D |
| Chemistry | 4 | technology | F24 | Other Separating | 49 |
| , , , , , , , , , , , , , , , , , , , | TF2 | Environmental | T06 | | B01D |
| Chemistry | 4 | technology | F24 | Separating Combination | 50 |
| Critimotry | TF2 | Environmental | T07 | Coparating Communication | B01D |
| Chemistry | 4 | technology | F24 | Pretreatment of gases | 51 |
| Officialistry | TF2 | Environmental | T08 | Tretreatment or gases | B01D |
| Ch amiatm | | | | Treatment of good | |
| Chemistry | 4 | technology | F24 | Treatment of gases | 52 |
| | TF2 | Environmental | T09 | | B01D |
| Chemistry | 4 | technology | F24 | Separation of gases | 53 |
| | TF2 | Environmental | T10 | Solid Waste and | |
| Chemistry | 4 | technology | F24 | Contaminated Soils | B09 |
| | TF2 | Environmental | T11 | Gathering of Domestic | |
| Chemistry | 4 | technology | F24 | Refuse | B65F |
| • | TF2 | Environmental | T12 | | |
| Chemistry | 4 | technology | F24 | Water Treatment | C02 |
| | TF2 | Environmental | T13 | | E01F |
| Chemistry | 4 | technology | F24 | Absorbing noise from roads | 8 |
| STISTINGER Y | TF2 | Environmental | T14 | | |
| Chamietry | | | F24 | Gas-Flow Silencers | F01N |
| Chemistry | 4 | technology | | Gas-Flow Silefficers | TUIIN |
| Ob a seed of | TF2 | Environmental | T15 | F.,,,,,,,,,,, | F00C |
| Chemistry | 4 | technology | F24 | Furnaces | F23G |
| | TF2 | Environmental | T16 | | |
| Chemistry | 4 | technology | F24 | Combustion Products | F23J |
| | TF2 | Environmental | T17 | Measuring Nuclear Or X- | |
| Chemistry | 4 | technology | F24 | Radiation | G01T |
| Mechanical | TF2 | | T01 | | |
| engineering | 5 | Handling | F25 | Manipulators | B25J |
| Mechanical | TF2 | Handling | T02 | Packaging Machines | B65B |
| iviculallical | 114 | i iai iulii iy | 102 | Packaging Machines | רססם |





| engineering Mechanical orgineering 5 mechanical orgineering 6 mechanical orgineering 7 mechanical orgineering 8 mechanical orgineering 8 mechanical orgineering 9 mechanical | AND INNOVATI | | ICY STUDIES | 1 | _ | 2001 |
|--|--------------|-----|-------------------|-----|----------------------------|-------|
| Begineering 5 | engineering | 5 | | F25 | | |
| Mechanical TF2 Handling F25 Articles Articl | Mechanical | | | | | |
| Mechanical of the part | engineering | | Handling | F25 | | B65C |
| Mechanical TF2 Handling F25 Devices B65G Mechanical TF2 Handling F25 Devices B65G Mechanical TF2 Handling F25 Handling T06 Handling F25 Handling T07 Handling F25 Lifting B66 Mechanical TF2 Handling F25 Lifting B66 Mechanical TF2 Handling F25 Lifting B66 Mechanical TF2 Handling F25 Dopening Bottles B67 Mechanical TF2 Machine tools F26 Mechanical TF2 Machine tools F26 Mechanical TF2 Machine tools F26 Mechanical Mechanical TF2 Machine tools F26 Mechanical Mechanical TF2 Machine tools F26 Mechanical Mechanical TF2 Machine tools F26 Machine Tools Mechanical TF2 Machine tools F26 Machine Tools B23 Mechanical TF2 Machine tools F26 Machine Tools B23 Mechanical TF2 Machine tools F26 Machine Tools B24 Mechanical TF2 Machine tools F26 Machine Tools B25 Mechanical TF2 Machine tools F26 Multi-Purpose Tools B25 Mechanical TF2 Machine | Mechanical | — | | | Containers for Storage of | |
| Engineering 5 | engineering | | Handling | F25 | Articles | B65D |
| Mechanical engineering 5 | Mechanical | TF2 | | T05 | Transport of Storage | |
| Mechanical regimeering 5 | engineering | 5 | Handling | F25 | Devices | B65G |
| Mechanical engineering 5 | Mechanical | TF2 | | T06 | | |
| engineering Mechanical engineering 5 mechanical engineering 5 mechanical engineering 5 mechanical engineering 6 mechanical engineering 7 meritoris merito | engineering | 5 | Handling | F25 | Handling Thin Material | B65H |
| Mechanical engineering 5 engineering 6 mechanical engineering 7 meritang meritang meritang 6 mechanical engineering 7 meritang meritang meritang 8 mechanical engineering 8 mechanical engineering 8 mechanical engineering 9 meritang meritang 9 m | Mechanical | TF2 | | T07 | _ | |
| Mechanical engineering S | engineering | 5 | Handling | F25 | Lifting | B66 |
| Mechanical engineering engineering sengineering and mechanical engineering engineering and mechanical engi | Mechanical | TF2 | | T08 | _ | |
| engineering dechanical Mechanical Mechanical Mechanical Properties 6 Machine tools F26 Mechanical Metal-Working A62D Mechanical engineering 6 Machine tools TF2 Mechanical Metal-Working B21 Mechanical engineering 6 Mechanical Mechanical engineering 6 Machine tools TF2 Mechanical Metal-Working B23 Mechanical engineering 6 Mechanical regimeering 6 Machine tools TF2 Grinding and Polishing B24 Mechanical engineering 6 Mechanical regimeering 6 Machine tools TF2 Grinding and Polishing B24 Mechanical engineering 6 Machine tools TF2 TO5 Machine tools F26 Mechanical engineering 6 Mechanical engineering 6 Machine tools F26 Nailing Or Stapling Tools B25C Mechanical engineering 6 Machine tools F26 Multi-Purpose Tools B25D Mechanical engineering 6 Machine tools F26 Multi-Purpose Tools B25F Mechanical engineering 6 Machine tools F26 Workshop Equipment B25G Mechanical engineering 7 Machine tools F26 Workshop Equipment B26B Mechanical engineering 8 Mechanical engineering 9 Machine tools F26 Cutting B | engineering | 5 | Handling | F25 | Opening Bottles | B67 |
| engineering fineering f | | TF2 | J | T01 | · · | |
| Mechanical engineering G | engineering | 6 | Machine tools | F26 | | A62D |
| engineering dechanical Mechanical Mechanical Mechanical TF2 engineering 6 Machine tools F26 Machine Tools Mechanical TF2 engineering 6 Machine tools F26 Machine Tools B23 Mechanical regimeering 6 Machine tools F26 Machine Tools B23 B23 Mechanical engineering 6 Machine tools F26 Machine Tools B24 B24 Mechanical engineering 6 Machine tools F26 Machine Tools F27 Machines Tools | | TF2 | | T02 | | |
| Mechanical engineering F2 Machine tools F26 Machine Tool | | 6 | Machine tools | | Mechanical Metal-Working | B21 |
| engineering Mechanical Mechanica | | | | | 3 | |
| Mechanical engineering engineering feed machanical engineering engineering feed engineering feed engineering feed machanical engineering feed feed feed machanical engineering feed | | | Machine tools | | Machine Tools | B23 |
| engineering dechanical Mechanical Mechanical engineering 6 Machine tools F26 Grinding and Polishing T05 B24 Mechanical engineering 6 TF2 T05 B25B Mechanical engineering 6 Machine tools F26 Nailing Or Stapling Tools B25C Mechanical engineering 6 Machine tools F26 Nailing Or Stapling Tools B25C Mechanical engineering 6 Machine tools F26 Percussive Tools B25D Mechanical engineering 6 Machine tools F26 Multi-Purpose Tools B25F Mechanical engineering 6 Machine tools F26 Multi-Purpose Tools B25F Mechanical engineering 6 Machine tools F26 Workshop Equipments B25G Mechanical engineering 6 Machine tools F26 Workshop Equipment B25H Mechanical engineering 6 Machine tools F26 Workshop Equipment B25H Mechanical engineering 6 Machine tools F26 Cutting B26B Mechanical engineering 6 Machine tools F26 Cutting B26B Mechanical engineering 7 F26 Working Wood B27 Mechanical engineering 7 F26 Machine tools F26 Presses Mechanical engineering 7 F26 Presses B30 Mechanical engineering 7 F27 Piston Machines Or Engines for Engines F01C Mechanical engineering 7 F27 Piston Machines Or Engines F01C <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | | | | | | |
| Mechanical engineering 6TF2 machine toolsT05 mode for procession for processi | | | Machine tools | | Grinding and Polishing | B24 |
| engineering Mechanical engineering engineering formalia formalia formal | | | TVIGOTII TO TOOIS | | | 521 |
| Mechanical engineering 6TF2 machine toolsT06 machine toolsNailing Or Stapling ToolsB25CMechanical engineering 6 mechanical engineering 6Machine toolsF26 machine toolsPercussive ToolsB25DMechanical engineering 6 mechanical engineering 6 machine toolsT09 mechanical engineering machine toolsT10 mechanical engineering machine toolsT10 mechanical engineering machine toolsT10 mechanical engineering machine toolsT11 mechanical engineering machine machin | | | Machine tools | | Tools Or Benches | B25B |
| engineering Mechanical engineering, 6Machine toolsF26Nailing Or Stapling ToolsB25CMechanical engineering, 6Machine toolsF26Percussive ToolsB25DMechanical engineering, 6Machine toolsF26Multi-Purpose ToolsB25FMechanical engineering, 6Machine toolsF26Multi-Purpose ToolsB25FMechanical engineering, 6Machine toolsF26ImplementsB25GMechanical engineering, 6Machine toolsF26Workshop EquipmentB25HMechanical engineering, 6Machine toolsF26ToolsB26BMechanical engineering, 6Machine toolsF26CuttingB26BMechanical engineering, 6Machine toolsF26CuttingB26DMechanical engineering, 6Machine toolsF26PerforatingB26FMechanical engineering, 6Machine toolsF26Working WoodB27Mechanical engineering, 7Machine toolsF26PressesB30Mechanical engineering, 7T01 turbines turbinesMachines Or Engines for + turbines F27Piston Machines Or Engines turbinesF01DMechanical engineering, 7T02 turbinesPiston Machines Or Engines for - turbinesF27 turbinesPiston Machines Or Engines for - turbinesMechanical engineering, 7T02 turbinesF27 turbinesPiston Machines Or Engines for - turbinesF27 turbinesMechanical engineering, 7T02< | | | Wacriiric tools | | Tools of Benefics | D23D |
| Mechanical engineering 6TF2 Machine toolsTO7 Percussive ToolsB25DMechanical engineering 6Machine toolsF26 Percussive ToolsB25FMechanical engineering 6Machine toolsF26 Multi-Purpose ToolsB25FMechanical engineering 6Machine toolsF26 ImplementsB25FMechanical engineering 6Machine toolsF26 ImplementsB25GMechanical engineering 6Machine toolsF26 Workshop EquipmentB25HMechanical engineering 6Machine toolsF26 Workshop EquipmentB25HMechanical engineering 6Machine toolsF26 CuttingB26BMechanical engineering 6Machine toolsF26 CuttingB26DMechanical engineering 6Machine toolsF26 PerforatingB26FMechanical engineering 6Machine toolsF26 Working WoodB27Mechanical engineering 7Machine toolsF26 PressesB30Mechanical engineering 7F26 PressesB30Engineering 7T01 Machines Or Engines for + DisplacementF01BEngineering 7T02 Engines, pumps, turbinesF27 Piston Machines Or EnginesF01CMechanical engineering 7T03 Machines Or Engines for - DisplacementF01DMechanical engineering 7T12 Engines, pumps, turbinesF27 DisplacementF01DMechanical engineering 7T2 Engines, pumps, turbinesF27 DisplacementF01D | | | Machine tools | | Nailing Or Stanling Tools | R25C |
| engineering Mechanical engineering, formalia engineering formalia engineering formalia engineering formalia engineering formalia formali | | | Machine tools | | Ivaling of Stapling 100is | D23C |
| Mechanical engineeringTF2 engineeringMachine toolsT08 machine toolsMulti-Purpose ToolsB25FMechanical engineering of engineeringTF2 engineeringMachine toolsT09 machine toolsHandles for Hand ImplementsB25GMechanical engineering of engineeringMachine toolsF26 machine toolsWorkshop EquipmentB25HMechanical engineeringMachine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsMechanical engineeringTF2 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsMechanical engineeringMachine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsMechanical engineeringMachine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsF26 machine toolsMechanical engineeringMachine toolsF26 machine toolsF26 machinesF26 machinesF26 machinesF26 machinesMechanical engineeringTF2 pumps, turbinesT01 machinesMachines or EnginesF01BMechanical engineeringTF2 pumps, turbinesT02 machinesPiston Machines or EnginesF01CMechanical engineeringTF2 pumps, turbinesT03 machines or Engines for - DisplacementF01DMechanical engineeringTF2 pumps, turbinesT03 machines or Engines for - DisplacementF01DMechanical engineeringTF2 pumps, turbinesT03 machines or EnginesF01D | | | Machine tools | | Porcussivo Tools | B25D |
| engineering6Machine toolsF26Multi-Purpose ToolsB25FMechanical engineeringTF2T09HandlesForHandlesMechanical engineeringF26Machine toolsF26ImplementsB25GMechanical engineeringMachine toolsF26Workshop EquipmentB25HMechanical engineeringMachine toolsF26Workshop EquipmentB25HMechanical engineeringMachine toolsF26CuttingB26BMechanical engineeringMachine toolsF26CuttingB26BMechanical engineeringMachine toolsF26CuttingB26DMechanical engineeringMachine toolsF26PerforatingB26FMechanical engineeringMachine toolsF26Working WoodB27Mechanical engineeringMachine toolsF26PressesB30Mechanical engineeringT72T15PressesB30Mechanical engineeringT72T01Machines Or Engines for + DisplacementF01BMechanical engineeringT72Piston Machines Or EnginesF01CMechanical engineeringT72Piston Machines Or Engines for - DisplacementF01DMechanical engineeringT72T03Machines Or Engines for - DisplacementF01DMechanical engineeringT72T03Machines Or Engines for - DisplacementF01DMechanical engineeringT72T03Machines Or Engines for - DisplacementF01D | | | Machine tools | | Fercussive roots | D23D |
| Mechanical engineeringTF2 engineeringMachine toolsT09 HandlesFor Hand ImplementsMechanical engineeringTF2 engineeringMachine toolsT10 engineeringMachine toolsF26 Workshop EquipmentB25HMechanical engineeringF26 engineeringMachine toolsF26 engineeringMachine toolsF26 engineeringB26BMechanical engineeringF26 engineeringMachine toolsF26 engineeringE26 engineeringB26DMechanical engineeringF26 engineeringMachine toolsF26 engineeringE26 engineeringE26 engineeringMechanical engineeringF26 engineeringMachine toolsF26 engineeringE26 engineeringMechanical engineeringF26 engineeringF26 engineeringF26 engineeringF26 engineeringMechanical engineeringF26 engineeringF26 engineeringF26 engineeringF26 engineeringMechanical engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringMechanical engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringMechanical engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringMechanical engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringMechanical engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF27 engineeringF | | | Machine tools | | Multi Burnese Tools | POSE |
| engineering 6 Machine tools F26 Implements B25G Mechanical TF2 engineering 6 Machine tools F26 Workshop Equipment B25H Mechanical TF2 engineering 6 Machine tools F26 Tools B26B Mechanical TF2 engineering 6 Machine tools F26 Cutting B26B Mechanical TF2 engineering 6 Machine tools F26 Cutting B26D Machine tools F26 Cutting B26D Machine tools F26 Perforating B26F Machine tools F26 Presses B30 Machine tools F26 Presses B30 Machine tools F26 Presses B30 Machines Or Engines for + Displacement F01B Poll Machines Or Engines F01C Poll Machines Or Engines F01C Poll Machines Or Engines F01C Machines Or Engines F01C Poll Machines Or Engines F01C Poll Machines Or Engines F01D Mach | | | IVIACITITE (OOIS | | | D23F |
| Mechanical engineeringTF2 engineeringMachine toolsTF2 toolsWorkshop EquipmentB25HMechanical engineeringTF2 engineeringMachine toolsTF2 toolsB26BMechanical engineeringTF2 engineeringMachine toolsTF2 toolsB26BMechanical engineeringTF2 engineeringMachine toolsTF2 toolsB26DMechanical engineeringTF2 engineeringMachine toolsTF2 toolsB26DMechanical engineeringTF2 engineeringTT4 toolsTT4 toolsTT4 toolsMechanical engineeringTF2 engines, pumps, pumps, pumps, T01 toolsTT5 toolsTT5 toolsMechanical engineeringTT2 toolsTT5 toolsTT5 toolsMechanical engineeringTT2 toolsTT5 toolsTT5 toolsMechanical engineeringTT2 toolsTT5 toolsTT5 toolsMechanical engineeringTT5 tools <td></td> <td></td> <td>Machine toole</td> <td></td> <td></td> <td>DOEC</td> | | | Machine toole | | | DOEC |
| engineering6Machine toolsF26Workshop EquipmentB25HMechanical engineeringTF2 engineeringTT1Other Hand-Held Cutting ToolsB26BMechanical engineeringTF2 engineeringTT2 engineeringB26DMechanical engineeringTF2 engineeringTT3 engineeringB26FMechanical engineeringTF2 engineeringTT4 engineeringB26FMechanical engineeringTF2 engineeringTT4 engineeringB26FMechanical engineeringTF2 engines, pumps, T01 turbinesTT5 pumps, T01 pumps, T01 pumps, T02 engineeringTT7 pumps, T02 engineeringTT7 pumps, T02 engineeringMechanical engineeringTF2 engines, pumps, T02 engineeringTT7 pumps, T02 engineeringTT7 pumps, T03 machines Or Engines for engineeringMechanical engineeringTT7 pumps, T03 machines Or Engines for engineeringTT7 pumps, T03 machines Or Engines for engineeringMechanical engineeringTT7 pumps, T03 machines Or Engines for engineeringTT7 pumps, T03 machines Or Engines for engineeringMechanical engineeringTT7 pumps, T03 machines Or Engines for engineeringTT7 pumps, T03 machines Or Engines for engineeringMechanical engineeringTT7 pumps, T03 machines Or Engines for engineeringF01DMechanical engineeringTT7 pumps, T03 machines Or Engines for engineeringF01D | | | Machine 10015 | | Implements | D23G |
| Mechanical engineeringTF2 machine toolsT11 other Hand-Held Cutting ToolsB26BMechanical engineeringTF2 machine toolsT12 machine toolsT12 machine toolsT12 machine toolsT12 machine toolsMechanical engineeringTF2 machine toolsT13 machine toolsT13 machine toolsT14 machine toolsT14 machine toolsT14 machine toolsT14 machine toolsMechanical engineeringTF2 machine toolsT15 | | | Machine tools | | Workshop Equipment | DOELL |
| engineering6Machine toolsF26ToolsB26BMechanical engineeringTF2T12T12engineeringMachine toolsF26CuttingB26DMechanical engineeringTF2T13B26FMechanical engineeringMachine toolsF26PerforatingB26FMechanical engineeringMachine toolsF26Working WoodB27Mechanical engineeringTF2T15T15T15Mechanical engineeringMachine toolsF26PressesB30Mechanical engineeringTF2T01Machines Or Engines for + DisplacementF01BMechanical engineeringTF2Piston Machines Or EnginesF01CMechanical engineeringTF2Piston Machines Or EnginesF01CMechanical engineeringTF2Piston Machines Or Engines for - DisplacementF01DMechanical engineeringTF2T03Machines Or Engines for - DisplacementF01DMechanical engineeringTF2Engines, DisplacementF01D | | | Machine tools | | | Б2ЭП |
| Mechanical engineeringTF2 engineeringMachine toolsT12 cuttingB26DMechanical engineeringTF2 engineeringMachine toolsF26 PerforatingB26FMechanical engineeringTF2 engineeringMachine toolsF26 Working WoodB27Mechanical engineeringTF2 engineeringT15 engineeringT15 engineeringMechanical engineeringTF2 engineeringT15 enginesT15 enginesMechanical engineeringTF2 pumpsT01 machines Or Engines for + T01 engineeringMechanical engineeringTF2 pumpsT02 engineeringMechanical engineeringTF2 pumpsT02 enginesMechanical engineeringTF2 pumpsT03 machines Or EnginesMechanical engineeringTF2 pumpsT03 machines Or EnginesMechanical engineeringTF2 enginesT03 machines Or Engines for - DisplacementMechanical TF2 enginesT04 machines Or EnginesF01D | | | Maahina taala | | | DOCD |
| engineering 6 Machine tools F26 Cutting B26D Mechanical TF2 T13 B26F Mechanical TF2 B26 Perforating B26F Machine tools F26 Working Wood B27 Mechanical TF2 B26 Presses B30 Engineering B30 Engines, Pumps, T01 Machines Or Engines for + B30 Engineering T52 Piston Machines Or Engines F01B Mechanical TF2 Pomps, T02 Piston Machines Or Engines F01C Engines, Pumps, T03 Machines Or Engines F01C Engines, Pumps, T03 Machines Or Engines F01C Engineering T52 Piston Machines Or Engines F01C Mechanical T52 Pomps, T03 Machines Or Engines F01C Mechanical T52 Engines, T04 | | | Machine tools | | TOOIS | D20D |
| Mechanical engineeringTF2 engineeringMachine toolsF26 PerforatingB26FMechanical engineeringTF2 engineeringMachine toolsF26 Working WoodB27Mechanical engineeringTF2 engineeringMachine toolsF26 PressesB30Mechanical engineeringTF2 engines, pumps, turbinesT01 Machines Or Engines for + DisplacementF01BMechanical engineeringTF2 engines, pumps, turbinesT02 Piston Machines Or EnginesF01CEngineeringTF2 engines, pumps, turbinesF27 Piston Machines Or EnginesF01CEngines, pumps, turbinesT02 Piston Machines Or EnginesF01CEngines, pumps, turbinesT03 Machines Or Engines for - DisplacementF01DMechanical engineeringT7 turbinesF27 DisplacementF01DMechanical TF2 Engines,T04T04 | | | Ma alaina ta ala | | Coutting of | DOCD |
| engineering 6 Machine tools F26 Perforating B26F Mechanical TF2 | | | iviachine toois | | Cutting | B20D |
| Mechanical TF2 | | | Machina ta ala | | Dorforation | DOCE |
| engineering6Machine toolsF26Working WoodB27Mechanical engineeringTF2T15B30Mechanical engineeringEngines, pumps, turbinesT01Machines Or Engines for + DisplacementF01BMechanical engineeringTF2Pumps, pumps, pumps, pumps, pumps, turbinesT02F27Piston Machines Or EnginesF01CMechanical engineeringTF2Pumps, pumps, | | | iviacnine toois | | renorating | D20F |
| Mechanical engineeringTF2 formula engineeringTF2 formula formula formula engineeringTF2 formula for | | | Ma abi: !- | | Monting Mass | D07 |
| engineering 6 Machine tools F26 Presses B30 Engines, pumps, T01 Machines Or Engines for + turbines F27 Displacement F01B Engines, pumps, T02 Engineering 7 turbines F27 Piston Machines Or Engines F01C Engines, pumps, T02 Piston Machines Or Engines F01C Engines, pumps, T02 Piston Machines Or Engines F01C Engines, pumps, T03 Machines Or Engines for - turbines F27 Displacement F01D Mechanical TF2 Engines, T04 | | | iviacnine toois | | vvorking vvood | DZ1 |
| Mechanical TF2 pumps, T01 Machines Or Engines for + Displacement F01B Engineering 7 turbines F27 Displacement F01B Engines, pumps, T02 engineering 7 turbines F27 Piston Machines Or Engines F01C Engines, Mechanical TF2 pumps, T03 Machines Or Engines for - Displacement F01D Mechanical TF2 Engines, T04 | | | Maabiraa | | Brassas | Doo |
| Mechanical engineeringTF2 pumps, 7 turbinesT01 pisplacementMachines Or Engines for + DisplacementF01BMechanical engineeringEngines, 7 turbinesT02 pumps, 7 pumps, 702 pumps, 7 turbinesF27 Piston Machines Or EnginesF01CMechanical engineeringTF2 pumps, 7 turbinesT03 pumps, 7 pumps, 703 pumps, 703 pumps, 7 pumps, | engineering | б | | F26 | Presses | R30 |
| engineering 7 turbines F27 Displacement F01B Engines, Mechanical TF2 pumps, engineering 7 turbines F27 Piston Machines Or Engines F01C Engines, Mechanical TF2 pumps, engineering 7 turbines F27 Displacement F01D Mechanical TF2 Engines, T04 | | | | T | | |
| Mechanical TF2 pumps, T02 pumps, T02 pumps, T02 pumps, T03 pumps, T03 Machines Or Engines for engineering TF2 pumps, T03 Machines Or Engines for pumps, T03 pumps, T03 pumps, T03 pumps, T03 pumps, T03 pumps, T03 pumps, T04 pumps, T04 pumps, T05 pumps, T05 pumps, T07 pumps, T08 pumps, T09 pumps, T0 | | | • | | | F04B |
| Mechanical engineeringTF2 turbinespumps, turbinesTO2 F27Piston Machines Or EnginesF01CMechanical engineeringTF2 pumps, turbinesT03 Machines Or Engines for F27 DisplacementF01DMechanical TF2 Engines,T04 | engineering | 7 | | F27 | Displacement | FU1B |
| engineering 7 turbines F27 Piston Machines Or Engines F01C Engines, Mechanical TF2 pumps, T03 Machines Or Engines for - engineering 7 turbines F27 Displacement F01D Mechanical TF2 Engines, T04 | | | | | | |
| Mechanical TF2 pumps, T03 Machines Or Engines for - pumps, Engineering 7 turbines F27 Displacement F01D Mechanical TF2 Engines, T04 | | | | | | |
| Mechanical engineeringTF2 turbinesTU3 turbinesMachines Or Engines for - DisplacementF01DMechanical TF2 Engines,TU4TU4 | engineering | 7 | | F27 | Piston Machines Or Engines | F01C |
| engineering7turbinesF27DisplacementF01DMechanicalTF2Engines,T04 | | | | | | |
| Mechanical TF2 Engines, T04 | | | | | _ | |
| | | | turbines | | Displacement | F01D |
| engineering 7 pumps, F27 Steam Engine Plants F01K | | | Engines, | | | |
| | engineering | 7 | pumps, | F27 | Steam Engine Plants | F01K |





| AND INNOVATI | ON POL | ICY STUDIES | | | | * * * | P-00 | March |
|-----------------|--------|-------------|---------|-------------|-----------------------------|-------|------|-------|
| | | turbines | | | | | | |
| | | Engines, | | | | | | |
| Mechanical | TF2 | pumps, | | T05 | | | | |
| engineering | 7 | turbines | | F27 | Cyclic Machines Or Engines | F01L | | |
| crigineening | · · | | | 1 21 | Oyelle Machines Of Engines | TOIL | | |
| | | Engines, | | T 00 | | | | |
| Mechanical | TF2 | pumps, | | T06 | Lubricating Of Machines Or | | | |
| engineering | 7 | turbines | | F27 | Engines | F01M | | |
| | | Engines, | | | | | | |
| Mechanical | TF2 | pumps, | | T07 | Cooling Of Machines Or | | | |
| engineering | 7 | turbines | | F27 | Engines | F01P | | |
| | | Engines, | | | 9 | | | |
| Mechanical | TF2 | pumps, | | T08 | Combustion Engines In | | | |
| | 7 | turbines | | F27 | General | F02 | | |
| engineering | 1 | | | ГΖІ | General | FUZ | | |
| | | Engines, | | | | | | |
| Mechanical | TF2 | pumps, | | T09 | Propulsive Machines Or | | | |
| engineering | 7 | turbines | | F27 | Engines For Liquids or Wind | F03 | | |
| | | Engines, | | | | | | _ |
| Mechanical | TF2 | pumps, | | T10 | Machines For Liquids | | | |
| engineering | 7 | turbines | | F27 | Pumps Piston | F04 | | |
| J. Ig. 10011119 | † · | Engines, | | 1 | Generating Combustion | | | |
| Machanical | TF2 | • | | T44 | O O | | | |
| Mechanical | | pumps, | | T11 | Products Of High P Or High | FOOD | | |
| engineering | 7 | turbines | | F27 | V | F23R | | |
| | | Engines, | | | | | | |
| Mechanical | TF2 | pumps, | | T12 | Other subjects Engines and | | | |
| engineering | 7 | turbines | | F27 | Pumps | F99Z | | |
| | | Engines, | | | • | | | |
| Mechanical | TF2 | pumps, | | T13 | | | | |
| engineering | 7 | turbines | | F27 | Nuclear Eng. | G21 | | |
| engineening | · - | Textile | and | 1 21 | Nuclear Eng. | 021 | | |
| Maskaniaal | тго | | and | T04 | | | | |
| Mechanical | TF2 | paper | | T01 | | | | |
| engineering | 8 | machines | | F28 | Methofs for Clothes | A41H | | |
| | | Textile | and | | | | | |
| Mechanical | TF2 | paper | | T02 | | | | |
| engineering | 8 | machines | | F28 | Repairing Footwear | A43D | | |
| | | Textile | and | | | | | |
| Mechanical | TF2 | paper | and | T03 | | | | |
| engineering | 8 | machines | | F28 | Production of Brushes | A46D | | |
| engineening | 0 | | ام مر م | 1 20 | 1 Toddellori or Brushes | A+0D | | |
| Maskari | T | Textile | and | T0.4 | | | | |
| Mechanical | TF2 | paper | | T04 | l <u>-</u> | | | |
| engineering | 8 | machines | | F28 | Working Paper | B31 | | |
| | | Textile | and | | | | | |
| Mechanical | TF2 | paper | | T05 | | | | |
| engineering | 8 | machines | | F28 | Printing | B41 | | |
| | | Textile | and | - | | | | |
| Mechanical | TF2 | paper | and | T06 | Mechanical Processing Of | | | |
| engineering | 8 | machines | | F28 | Skins Hides Or Leather | C14B | | |
| engineening | 0 | | 025 | 1 20 | OKINS THUES OF LEATHER | O 14D | | |
| | | Textile | and | T ^- | | | | |
| Mechanical | TF2 | paper | | T07 | | | | |
| engineering | 8 | machines | | F28 | Threads or Fibers | D01 | | |
| | | Textile | and | | | | | |
| Mechanical | TF2 | paper | | T08 | Crimping of Threads or | | | |
| engineering | 8 | machines | | F28 | Fibers | D02 | | |
| Mechanical | TF2 | Textile | and | T09 | | | | |
| engineering | 8 | | unu | F28 | Shedding Mechanisms | D03 | | |
| engineening | U | paper | | 1 40 | Oneduing Medianisms | טטט | | |





| Mechanical organization Textile And paper Textile And Mechanical Textile And Mechanical Textile And Paper Textile And Mechanical Textil | AND INNOVATI | ON POL | | l | _ | <u> </u> |
|--|--------------|--------|-------------|------|------------------------------|----------|
| Mechanical engineering and mechanical regineering and mechanical regineering and mechanical engineering and machines Textile and paper amachines Total paper and paper an | | | machines | | | |
| Page | | | | | | |
| Textile and paper Tit machines F28 Making Nets D04C Mechanical engineering Textile and paper Tit machines F28 Making Nets D04G Mechanical engineering Textile and paper Tit | Mechanical | | | _ | | |
| Mechanical engineering engineering and | engineering | 8 | | F28 | Knitting | D04B |
| Page | | | Textile and | | | |
| Mechanical engineering Textile and paper engineering Textile | Mechanical | TF2 | paper | T11 | | |
| Mechanical engineering engineering and mechanical engineering engineering and mechanical engineering and m | engineering | 8 | machines | F28 | Braiding | D04C |
| engineering Amechanical Enginee | | | Textile and | | | |
| Textile and paper and pa | Mechanical | TF2 | paper | T12 | | |
| Mechanical engineering TF2 paper machines T13 machines T28 Textile Fabrics D04H Mechanical engineering TEXTILIE and machines T28 Sewing D05 Mechanical engineering TEXTILIE and machines T28 Sewing D05 Mechanical engineering TEXTILIE and machines Marking Inspecting Mechanical engineering TEXTILIE and machines Marking Inspecting Mechanical engineering TEXTILIE and machines F28 Textilie D06H Mechanical engineering TEXTILIE and machines F28 Textilie D06J Mechanical engineering TEXTILIE and machines F28 Other Treatments D06M Mechanical engineering TEXTILIE and machines F28 Other Treatments D06M Mechanical engineering TEXTILIE and machines F28 Decorating Textiles D06P Mechanical engineering TEXTILIE and machines F28 Decorating Textiles D06P Mechanical engineering TEXTILIE and machines F28 Decorating Textiles D06Q Mechanical engineering TEXTILIE and paper TEXTILIE an | engineering | 8 | machines | F28 | Making Nets | D04G |
| engineering 8 machines F28 Textile Fabrics D04H Mechanical engineering TF2 paper Textile and paper T14 paper D05 Mechanical engineering TF2 paper Textile and paper T15 paper Mechanical or Pressure D06G Mechanical engineering TF2 paper T16 paper Marking Inspecting Paper in T16 paper D06H Mechanical engineering TF2 paper machines F28 paper in T20 paper T17 pleating Kilting Or Severing Paper in T20 paper machines D06J Mechanical engineering TF2 paper machines T28 paper machines T28 paper machines D06J Mechanical engineering TF2 paper machines T28 paper machines T29 paper machines T29 paper machines T20 paper machines T20 paper machines D06D Mechanical engineering Textile and machines T28 paper machines T28 paper machines D06Q Mechanical engineering Textile and machines T28 paper machines T28 paper machines T28 paper machines D06Q Mechanical engineering Textile and machines T28 paper machines <t< td=""><td></td><td></td><td>Textile and</td><td></td><td></td><td></td></t<> | | | Textile and | | | |
| engineering 8 machines F28 Textile Fabrics D04H Mechanical engineering TF2 paper paper apper paper angineering Textile and machines T28 Sewing D05 Mechanical engineering TF2 paper angineering T55 Textile and paper angineering Mechanical or Pressure (Leaning of Textile D06G Mechanical engineering Textile and paper angineering T62 Mechanical or Pressure (Leaning of Textile D06H Mechanical engineering Textile and paper angineering T62 Mechanical or Pressure (Leaning of Textile D06H Mechanical engineering T62 Textile and paper angineering T28 Textile and paper angineering T17 Pleating Kilting Or Goffering Textile D06J Mechanical engineering T62 Textile and paper angineering T19 D06M D06M Mechanical engineering T62 Dyeing Or Printing Textiles D06P D06D Mechanical engineering T62 Decorating Textiles D06Q D06D Mechanical engineering T62 D06D T62 D06D D06D <tr< td=""><td>Mechanical</td><td>TF2</td><td>paper</td><td>T13</td><td></td><td></td></tr<> | Mechanical | TF2 | paper | T13 | | |
| Mechanical engineering TF2 paper engineering TEXIIIE and paper and machines TF2 paper engineering TEXTIIE and paper and machines TEXTIIE and paper and machines Mechanical or Pressure follows D06G Mechanical engineering Textile and machines Marking Inspecting Seaming Or Severing for Severing and Fextile D06H Mechanical engineering Textile and paper and machines Textile and machines Textile and machines Textile and machines Textile and machines D06M D06D Mechanical engineering 8 Textile and machines Textile and machines Textile and machines D06D D06D Mechanical engineering 8 Textile and machines Textile and machines Textile and machines D06Q D06D Mechanical engineering 9 Textile and machines Textile and machines Textile and machines D06Q D06Q Mechanical engineering 9 Textile and machines | engineering | 8 | | F28 | Textile Fabrics | D04H |
| Mechanical engineering TF2 paper machines T14 machines Sewing D05 Mechanical engineering TF2 paper machines T15 paper Paper machines T15 paper Pap | | | Textile and | | | |
| engineering 8 machines F28 Sewing D05 Textile and machines F28 Sewing D06G Textile and machines F28 Sewing D06H Textile and machines F28 Decorating Textiles D06P Textile and paper T20 Decorating Textiles D06P Textile and paper T21 T21 machines F28 Decorating Textiles D06Q Textile and paper T21 T21 machines F28 Decorating Textiles D06Q Textile and paper T21 T21 machines F28 Decorating Textiles D06Q Textile and paper T21 T21 machines F28 Decorating Textiles D06Q Textile and paper T21 | Mechanical | TF2 | | T14 | | |
| Mechanical engineering TF2 paper machines TF2 paper machines TF2 paper machines TF2 paper paper machines TF2 paper paper paper paper machines TF2 paper paper paper paper paper paper paper paper machines TF2 paper | | | | | Sewing | D05 |
| Mechanical engineering TF2 paper machines T15 machines Mechanical or Pressure Cleaning of Textile D06G Mechanical engineering Textile and machines T28 machines T28 machines T28 machines D06H Mechanical engineering Textile and paper machines T17 machines T28 machines T28 machines D06H Mechanical engineering T62 paper machines T18 machines P28 machines D06J Mechanical engineering T62 paper machines T18 machines D06M Mechanical engineering T62 paper machines T19 paper machines T19 paper machines D06M Mechanical engineering T62 paper machines T20 paper machines T20 paper machines D06P Mechanical engineering T62 paper machines T21 paper machines P28 paper Making D06Q Mechanical engineering T62 paper machines T22 paper machines D06Q Mechanical engineering T62 Other special machines T28 papers D06Q Mechanical engineering T62 Other special T00 machines F29 Paper Making D21 Mechanical engineering T62 Other special T03 machines P29 Paper Pap | 339 | | | | <u> </u> | |
| Partial Paper Patrial Paper Patrial Paper Patrial Paper Patrial Paper Patrial Paper Paper Patrial Paper Paper Patrial Paper Pape | Mechanical | TF2 | | T15 | Mechanical Or Pressure | |
| Mechanical engineering Rechanical Engineering | | | | | | D06G |
| Mechanical engineering TF2 machines paper machines T16 paper machines T28 paper machines T28 paper machines T28 paper machines T29 paper machines T17 peleating kilting or goffering Textile D06J Mechanical engineering Textile and machines T28 paper machines T18 paper machines T28 paper machines T29 paper machines T29 paper machines T20 paper machines T20 paper machines T20 paper machines T20 paper machines T21 paper machines T22 paper machines </td <td>ongong</td> <td></td> <td></td> <td></td> <td></td> <td></td> | ongong | | | | | |
| engineering 8 machines F28 Textile D06H Mechanical engineering Textile and paper and | Mechanical | TF2 | | T16 | | |
| Mechanical engineering 8 machines F28 Other Treatments D06M Mechanical engineering 8 machines F28 Other Treatments D06M Mechanical engineering 8 machines F28 Other Treatments D06M Mechanical engineering 8 machines F28 Dyeing Or Printing Textiles D06P Textile and paper p28 Dyeing Or Printing Textiles D06P Textile and paper p28 Dyeing Or Printing Textiles D06P Textile and paper p29 Dyeing Or Printing Textiles D06P | | | | | | D06H |
| Mechanical engineering TF2 engineering paper machines T17 peating Kilting or Goffering Textile D06J Mechanical engineering Textile and paper machines T18 paper machines T28 paper machines D06M Mechanical engineering Textile and paper machines T29 paper machines D06P Mechanical engineering TF2 paper machines T20 paper machines D06P Mechanical engineering Textile and paper machines D06Q Mechanical engineering Textile and paper machines D06Q Mechanical engineering Textile and paper machines D06Q Mechanical engineering T22 paper machines T22 paper Making D21 Mechanical engineering T62 paper machines T22 paper Making D21 Mechanical engineering T22 paper machines T22 paper papers D09Z Mechanical engineering T22 paper machines T22 papers D09Z Mechanical engineering T62 paper machines T23 papers D09Z Mechanical engineering T62 paper machines T23 papers D01B papers D01B papers Mechanical engineering T62 paper machines T62 paper papers <td>originooning</td> <td> </td> <td></td> <td>1 20</td> <td>TOXIIIO</td> <td>D0011</td> | originooning | | | 1 20 | TOXIIIO | D0011 |
| engineering 8 machines F28 Goffering Textile D06J Mechanical engineering TExtile and paper T18 machines F28 Other Treatments D06M Mechanical engineering TF2 machines F28 Dyeing Or Printing Textiles D06P Mechanical engineering Textile and paper anchines T20 paper anchines T20 paper anchines D06Q Mechanical engineering Textile and machines P28 paper Making D21 Mechanical engineering Textile and machines P28 paper Making D21 Mechanical engineering Textile and machines P28 paper Making D21 Mechanical engineering Textile and machines P28 paper Making D21 Mechanical engineering Textile and machines P28 papers D99Z Mechanical engineering Textile and machines P28 papers D99Z Mechanical regular engineering Textile and machines P29 paper Papers D99Z Mechanical engineering Textile and machines P29 Planting A01B Mechanical engineering Textile and machines P29 Planting A01C Mechanical engineering </td <td>Mechanical</td> <td>TF2</td> <td></td> <td>T17</td> <td>Pleating Kilting Or</td> <td></td> | Mechanical | TF2 | | T17 | Pleating Kilting Or | |
| Mechanical engineering 8 machines F28 Other Treatments D06M Textile and paper T19 machines F28 Dyeing Or Printing Textiles D06P Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T21 machines F28 Paper Making D21 Textile and paper T21 machines F28 Paper Making D21 Textile and paper T21 machines F28 Paper Making D21 Textile and paper T22 Other Special T01 machines F28 papers D99Z Mechanical TF2 other special T02 machines F29 Planting A01B Mechanical TF2 Other special T03 machines F29 Planting A01C Mechanical TF2 Other special T03 machines F29 Harvesting A01D Mechanical TF2 Other special T04 machines F29 Harvesting A01D Mechanical TF2 Other special T04 machines F29 machines F29 Harvesting A01D Mechanical TF2 Other special T04 machines F29 machines F29 Harvested Produce A01F Mechanical TF2 Other special T05 machines F29 machines F29 Horticulture A01G Mechanical TF2 Other special T05 machines F29 machines F29 Production of Dairy Products A01J Mechanical TF2 Other special T06 machines F29 Production of Dairy Products A01J | | | | | | D061 |
| Mechanical engineering TF2 machines T18 machines Other Treatments D06M Mechanical engineering TExtile and paper machines T19 machines D06P Mechanical engineering TExtile and machines D06P Mechanical engineering TF2 paper machines T20 paper machines T20 paper machines D06Q Mechanical engineering TExtile and machines T21 paper machines T21 paper machines D06Q Mechanical engineering TE2 paper machines T22 paper machines T22 paper machines D06Q Mechanical engineering TF2 paper machines T22 paper machines T22 paper machines D06Q Mechanical engineering TF2 other special machines T22 paper machines D06Q Mechanical engineering TF2 other special machines T22 paper machines D06Q Mechanical engineering TF2 other special machines T00 papers D09Z Mechanical engineering TF2 other special machines T00 papers P09Z Mechanical engineering TF2 other special machines T00 papers P00T Mechanical engineering TF2 other special machines T04 paper machines P00T < | engineening | 0 | | 1 20 | Gonering Textile | D003 |
| engineering 8 machines F28 Other Treatments D06M Mechanical F28 paper F28 pyeing Or Printing Textiles D06P Textile and paper T20 paper T20 paper Machines F28 pecorating Textiles D06Q Textile and paper T20 paper T21 paper Machines F28 paper Making D21 Mechanical Paper T21 paper T21 paper Machines F28 paper Making D21 Textile and paper T21 paper Making D21 Textile and paper T22 paper Making D21 Textile and paper T22 paper Making D21 Textile and paper T22 paper Making D21 Textile and paper S28 paper Making D21 Textile and paper Makin | Machanical | TEO | | T10 | | |
| Mechanical engineering 8 machines F28 Dyeing Or Printing Textiles D06P Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T21 machines F28 Paper Making D21 Textile and paper T21 machines F28 Paper Making D21 Textile and paper T22 Other Special papers D99Z Mechanical engineering machines F28 Paper Making D21 Textile and paper T22 Other Subjects textiles and papers D99Z Mechanical rF2 Other special ro1 machines F29 Paper Making D21 Mechanical rF2 Other special ro1 machines F29 Paper Making D21 Mechanical rF2 Other special ro1 machines F29 Paper Making D21 Mechanical rF2 Other special ro1 machines F29 Paper Making D21 Mechanical rF2 Other special ro2 machines F29 Paper Making D21 Mechanical rF2 Other special ro3 machines F29 Paper Making D21 Mechanical rF2 Other special ro3 machines F29 Paper Making D21 Mechanical rF2 Other special ro3 machines F29 Paper Making D21 Mechanical rF2 Other special ro3 machines F29 Paper Making D21 Mechanical rF2 Other special ro3 machines F29 Harvesting A01C Mechanical rF2 Other special ro5 machines F29 Horticulture A01G Mechanical rF2 Other special ro3 machines F29 Production of Dairy Products A01J Mechanical rF2 Other special ro3 machines F29 Production of Dairy Products A01J | | | | | Other Treetments | DOGM |
| Mechanical engineeringTF2 paper machinesT19 peper machinesT19 peper machinesDyeing Or Printing TextilesD06PMechanical engineeringTF2 paper machinesT20 paper peper machinesT20 paper peper peper peper peper peper per pe | engineening | 0 | | FZ0 | Other Treatments | DUOIVI |
| engineering 8 machines F28 Dyeing Or Printing Textiles D06P Textile and paper T20 machines F28 Decorating Textiles D06Q Textile and paper T21 paper T21 machines F28 Paper Making D21 Textile and paper T21 paper T21 machines F28 Paper Making D21 Textile and paper T21 paper T22 paper T22 paper Machines F28 Paper Making D21 Mechanical TF2 paper T22 paper T22 paper Making D21 Mechanical TF2 Other special engineering 9 machines F29 Soil Working A01B Mechanical TF2 Other special engineering 9 machines F29 Planting A01C Mechanical TF2 Other special engineering 9 machines F29 Harvesting A01D Mechanical TF2 Other special engineering 9 machines F29 Harvested Produce A01F Mechanical TF2 Other special machines F29 Horticulture A01G Mechanical TF2 Other special engineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special machines F29 Production of Dairy Products A01J Mechanical TF2 Other special machines F29 Production of Dairy Products A01J | Machanical | TEO | | T10 | | |
| Mechanical engineering 8 machines F28 Decorating Textiles D06Q Mechanical engineering 8 machines F28 Decorating Textiles D06Q Textile and paper T21 Paper Making D21 Textile and paper T22 Other special engineering 9 machines F29 Planting A01C Mechanical TF2 Other special engineering 9 machines F29 Harvesting A01D Mechanical TF2 Other special engineering 9 machines F29 Harvested Produce A01F Mechanical TF2 Other special engineering 9 machines F29 Harvested Produce A01F Mechanical TF2 Other special engineering 9 machines F29 Harvested Produce A01F Mechanical TF2 Other special engineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special engineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special engineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special engineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special machines F29 Production of Dairy Products A01J Mechanical TF2 Other special machines F29 Production of Dairy Products A01J | | | | _ | Dyoing Or Printing Toytilos | DOED |
| Mechanical engineeringTF2 gaper machinesT20 paper machinesT20 paper paper machinesT21 paper machinesT22 paper machinesT23 paper machines <td>engineening</td> <td>0</td> <td></td> <td>F20</td> <td>Dyeing Of Finding Textiles</td> <td>D00P</td> | engineening | 0 | | F20 | Dyeing Of Finding Textiles | D00P |
| engineering 8 machines F28 Decorating Textiles D06Q Textile and Paper T21 Paper Making D21 Textile and Paper Making D21 Tex | Machanical | тго | | Tan | | |
| Mechanical engineering 8 machines F28 Paper Making D21 Textile and paper T21 paper Making D21 Textile and paper T22 Other Subjects textiles and papers D99Z Mechanical engineering 8 machines F28 papers D99Z Mechanical engineering 9 machines F29 Soil Working A01B Mechanical TF2 Other special T02 pagineering 9 machines F29 Planting A01C Mechanical engineering 9 machines F29 Harvesting A01D Mechanical TF2 Other special T03 pagineering 9 machines F29 Harvesting A01D Mechanical engineering 9 machines F29 Harvested Produce A01F Mechanical TF2 Other special T05 pagineering 9 machines F29 Horticulture A01G Mechanical TF2 Other special T06 pagineering 9 machines F29 Production of Dairy Products A01J Mechanical TF2 Other special T06 pagineering 9 machines F29 Production of Dairy Products A01J | | | | | December Taytiles | Doco |
| Mechanical engineeringTF2 paper 8 machinesT21 paper paper F28 Paper MakingD21Mechanical engineeringTF2 paper paper paperT22 paper papersT22 paper papersD99ZMechanical engineeringTF2 paper papersT22 paper papersD99ZMechanical engineeringTF2 paper papersT01 papersD99ZMechanical engineeringTF2 paper papersT01 papersD99ZMechanical engineeringTF2 paper papersT01 papersA01BMechanical engineeringTF2 paper papersT02 papersPapersMechanical engineeringTF2 paper papersT02 papersPapersMechanical engineeringTF2 paper papersT03 papersPapersMechanical engineeringTF2 paper papersT04 papersPapersMechanical engineeringTF2 paper papersT05 papersParersMechanical engineeringTF2 papersT06 papersProduction of Dairy ProductsA01GMechanical engineeringTF2 papersProduction of Dairy ProductsA01JMechanical TF2 papersTT2 papersProduction of Dairy ProductsA01J | engineering | 8 | | FZ8 | Decorating Textiles | טטטע |
| engineering 8 machines F28 Paper Making D21 Mechanical TF2 paper T22 Other Subjects textiles and engineering 8 machines F28 papers D99Z Mechanical TF2 Other special T01 machines F29 Soil Working A01B Mechanical TF2 Other special T02 machines F29 Planting A01C Mechanical TF2 Other special T03 machines F29 Harvesting A01D Mechanical TF2 Other special T04 machines F29 Harvested Produce A01F Mechanical TF2 Other special T04 machines F29 Harvested Produce A01F Mechanical TF2 Other special T05 machines F29 Horticulture A01G Mechanical TF2 Other special T05 machines F29 Horticulture A01G Mechanical TF2 Other special T06 machines F29 Production of Dairy Products A01J Mechanical TF2 Other special T06 machines F29 Production of Dairy Products A01J | NA l l l | | | T04 | | |
| Mechanical engineeringTextile and paperT22 Other Subjects textiles and papersD99ZMechanical engineeringTF2 Other special engineeringTF2 Other special machinesTO1 Soil WorkingA01BMechanical engineeringTF2 Other special engineeringTF2 Other special machinesTO2 PlantingA01CMechanical engineeringTF2 Other special engineering | | | | | Dan an Malda a | D04 |
| Mechanical engineeringTF2 machinespaper machinesT22 machinesOther Subjects textiles and papersD99ZMechanical engineeringTF2 other special engineering | engineering | ď | | F28 | raper iviaking | UZT |
| engineering8machinesF28papersD99ZMechanical engineeringTF2Other special machinesT01Soil WorkingA01BMechanical engineeringTF2Other special machinesT02A01CMechanical engineeringTF2Other special machinesT03A01CMechanical engineeringTF2Other special machinesT04A01DMechanical engineeringTF2Other special machinesT05A01FMechanical engineeringTF2Other special machinesT05A01GMechanical engineeringTF2Other special machinesT06A01GMechanical engineeringTF2Other special machinesT06A01JMechanical TF2Other special machinesT06Production of Dairy ProductsA01JMechanical TF2Other special T07T07A01J | NA - ala | | | T00 | Other Outlier (17) | |
| Mechanical engineeringTF2 9Other machinesspecial F29T01 F29Soil WorkingA01BMechanical engineeringTF2 9Other machinesT02 F29PlantingA01CMechanical engineeringTF2 9Other machinesT03 F29HarvestingA01DMechanical engineeringTF2 9Other machinesT04 F29Harvested ProduceA01FMechanical engineeringTF2 9Other machinesT05 F29HorticultureA01GMechanical engineeringTF2 9Other machinesT06 F29Production of Dairy ProductsA01JMechanical engineeringTF2 9Other machinesT07Production of Dairy ProductsA01J | | | | | 1 | D007 |
| engineering9machinesF29Soil WorkingA01BMechanical engineering9machinesF29PlantingA01CMechanical engineering9machinesF29HarvestingA01DMechanical engineering9machinesF29HarvestingA01DMechanical engineering9machinesF29Harvested ProduceA01FMechanical engineering9machinesF29HorticultureA01GMechanical engineering9machinesF29Production of Dairy ProductsA01JMechanical TF2Other special engineering9Production of Dairy ProductsA01JMechanical TF2Other special T07Production of Dairy ProductsA01J | | | | | papers | D99Z |
| Mechanical engineeringTF2Other special machinesTO2 plantingA01CMechanical engineeringTF2Other special machinesTO3 plantingA01DMechanical engineeringTF2Other special machinesTO4 plantingA01DMechanical engineeringTF2Other special machinesTO4 plantingA01FMechanical engineeringTF2Other special machinesTO5 plantingA01GMechanical engineeringTF2Other special machinesTO6 plantingA01GMechanical engineeringTF2Other special machinesTO6 plantingA01JMechanical TF2Other special TO7Production of Dairy ProductsA01J | | | | | | |
| engineering9machinesF29PlantingA01CMechanical engineeringTF2Other special parametris of the par | | | | | Soil Working | AU1B |
| Mechanical engineeringTF2Other machinesspecial F29T03 HarvestingA01DMechanical engineeringTF2Other machinesSpecial F29T04 Harvested ProduceA01FMechanical engineeringTF2Other machinesSpecial F29T05 HorticultureA01GMechanical engineeringTF2Other machinesSpecial F29T06 Production of Dairy ProductsA01JMechanical engineeringTF2Other machinesSpecial F29T07 | | | - | | | |
| engineering9machinesF29HarvestingA01DMechanical engineering9machinesF29Harvested ProduceA01FMechanical engineering9machinesF29HorticultureA01GMechanical TF2 other special engineering9machinesF29HorticultureA01GMechanical engineering9machinesF29Production of Dairy ProductsA01JMechanical TF2 other special T07T07T07 | | | | | Planting | A01C |
| Mechanical engineeringTF2 9Other machinesspecial F29T04 Harvested ProduceA01FMechanical engineeringTF2 9Other machinesT05 F29HorticultureA01GMechanical engineeringTF2 9Other machinesT06 F29Production of Dairy ProductsA01JMechanical engineeringTF2 9Other machinesT07T07 | | | • | | l | |
| engineering9machinesF29Harvested ProduceA01FMechanical engineeringTF2 machinesOther special F29TO5 HorticultureA01GMechanical engineeringTF2 machinesOther special F29TO6 Production of Dairy ProductsA01JMechanicalTF2Other special TT2TO7 | | | | | Harvesting | A01D |
| Mechanical engineeringTF2 9Other machinesspecial F29T05 HorticultureA01GMechanical engineeringTF2 9Other machinesT06 F29Production of Dairy ProductsA01JMechanicalTF2Other specialT07T07 | | | - | | | |
| engineering9machinesF29HorticultureA01GMechanical engineeringTF2Other special production of Dairy ProductsTF2Mechanical TF2Other special T07TT7 | | | | | Harvested Produce | A01F |
| Mechanical engineeringTF2 9Other machinesspecial F29T06 Production of Dairy ProductsA01JMechanicalTF2Other specialT07 | | | • | | | |
| engineering9machinesF29Production of Dairy ProductsA01JMechanicalTF2Other specialT07 | | | | | Horticulture | A01G |
| Mechanical TF2 Other special T07 | | | • | | | |
| | | | | | Production of Dairy Products | A01J |
| engineering 9 machines F29 Husbandry A01K | | | | | | |
| | engineering | 9 | machines | F29 | Husbandry | A01K |





| AND INNOVATI | | | | _ | |
|---|---|--|--|--|---|
| Mechanical | TF2 | Other special | | | |
| engineering | 9 | machines | F29 | Shoeing Of Animals | A01L |
| Mechanical | TF2 | Other special | T09 | | |
| engineering | 9 | machines | F29 | Traps for animals | A01M |
| Mechanical | TF2 | Other special | T10 | | |
| engineering | 9 | machines | F29 | Baking | A21B |
| Mechanical | TF2 | Other special | T11 | | |
| engineering | 9 | machines | F29 | Dough | A21C |
| Mechanical | TF2 | Other special | T12 | | |
| engineering | 9 | machines | F29 | Treatment of Meat | A22 |
| Mechanical | TF2 | Other special | T13 | | |
| engineering | 9 | machines | F29 | Process of Harvests | A23N |
| Mechanical | TF2 | Other special | T14 | | |
| engineering | 9 | machines | F29 | Working Of Foodstuffs | A23P |
| Mechanical | TF2 | Other special | T15 | | |
| engineering | 9 | machines | F29 | Preparing Grain and Fruit | B02B |
| Mechanical | TF2 | Other special | T16 | | |
| engineering | 9 | machines | F29 | Working Cement or Stone | B28 |
| Mechanical | TF2 | Other special | T17 | | |
| engineering | 9 | machines | F29 | Working of Plastics | B29 |
| Mechanical | TF2 | Other special | T18 | Other Micro and Nao | |
| engineering | 9 | machines | F29 | Technology | B99Z |
| Mechanical | TF2 | Other special | T19 | | |
| engineering | 9 | machines | F29 | Manufacturind or Shaping | C03B |
| Mechanical | TF2 | Other special | T20 | | |
| engineering | 9 | machines . | F29 | Processes Of Compounding | C08J |
| | | | | | |
| Mechanical | TF2 | Other special | T21 | | |
| Mechanical engineering | TF2 9 | Other special machines | T21 F29 | Pitching Machines | C12L |
| | | • | | Pitching Machines Reducing the size of material | C12L |
| | | machines | F29 | Reducing the size of material | |
| engineering | 9 | machines | F29 | | |
| engineering Mechanical | 9 TF2 | machines Other special | F29 T22 | Reducing the size of material from which sugar is to be | C13B |
| engineering Mechanical | 9 TF2 | machines Other special | T22 F29 | Reducing the size of material from which sugar is to be extracted | C13B |
| Mechanical engineering Mechanical | 9 TF2 9 | Machines Other special machines | T22 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from | C13B 5 |
| engineering Mechanical engineering | 9 TF2 9 | Other special machines Other special machines | T22 F29 T23 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar | C13B 5 C13B 15 |
| engineering Mechanical engineering Mechanical engineering | 9 TF2 9 TF2 9 | Other special machines Other special machines | T22 F29 T23 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted | C13B 5 C13B 15 |
| Mechanical engineering Mechanical engineering Mechanical engineering Mechanical | 9 TF2 9 TF2 9 TF2 | Other special machines Other special machines Other special machines Other special | T22 F29 T23 F29 T24 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar | C13B 5 C13B 15 C13B |
| Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 | Other special machines Other special machines Other special machines Other special machines | T22 F29 T23 F29 T24 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices | C13B 5 C13B 15 C13B 25 |
| engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical | 9 TF2 9 TF2 9 TF2 9 | Other special machines Other special machines Other special machines Other special machines Other special | T22 F29 T23 F29 T24 F29 T25 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially | C13B 5 C13B 15 C13B 25 C13B |
| engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially | C13B 5 C13B 15 C13B 25 C13B |
| engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Other special | T22 F29 T23 F29 T24 F29 T25 F29 T26 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar | C13B 5 C13B 15 C13B 25 C13B 45 |
| engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar | C13B 5 C13B 15 C13B 25 C13B 45 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production | C13B 5 C13B 15 C13B 25 C13B 45 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus | C13B 5 C13B 15 C13B 25 C13B 45 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | F29 T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production | C13B 5 C13B 15 C13B 25 C13B 45 C13C |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar | C13B 5 C13B 15 C13B 25 C13B 45 C13C |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines | T22 F29 T23 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Thermal | F29 T22 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 T30 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Other special machines | F29 T22 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 T30 F29 T01 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons Ammunitions Blasting | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 F42 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Thermal processes and apparatus | F29 T22 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 T30 F29 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Thermal processes and apparatus Thermal | F29 T22 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 T30 F29 T01 F30 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons Ammunitions Blasting Steam generation | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 F42 |
| engineering Mechanical engineering | 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 TF2 9 | Other special machines Thermal processes and apparatus | F29 T22 F29 T24 F29 T25 F29 T26 F29 T27 F29 T28 F29 T29 F29 T30 F29 T01 | Reducing the size of material from which sugar is to be extracted Expressing water from material from which sugar has been extracted Evaporating or boiling sugar juices Cutting machines specially adapted for sugar Sugar Production Evaporation Apparatus Cutting of Sugar Weapons Ammunitions Blasting | C13B 5 C13B 15 C13B 25 C13B 45 C13C C13G C13H F41 F42 |





| AND INNOVATI | ON POL | CY STUDIES | | | | * | 300 |
|--------------|-------------|------------|------|-------------|----------------------------|--------------|---------|
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T03 | Combustion Apparatus | | |
| engineering | 0 | apparatus | | F30 | Using Fluent Fuel | F23C | |
| - ingg | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T04 | | | |
| engineering | 0 | apparatus | and | F30 | Burners | F23D | |
| engineening | 0 | Thermal | | 1 30 | Daniers | 1 230 | |
| Machaniaal | тга | | ام م | TOE | | | |
| Mechanical | TF3 | processes | and | T05 | | 50011 | |
| engineering | 0 | apparatus | | F30 | Grates | F23H | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T06 | Feeding Fuel To Combustion | | |
| engineering | 0 | apparatus | | F30 | Apparatus | F23K | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T07 | | | |
| engineering | 0 | apparatus | | F30 | Air Supply | F23L | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T08 | | | |
| engineering | 0 | apparatus | | F30 | Combustion Chambers | F23M | |
| - ingg | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T09 | | | |
| engineering | 0 | apparatus | ana | F30 | Controlling Combustion | F23N | |
| Crigineering | - | Thermal | | 1 00 | Controlling Combastion | 1 2011 | |
| Mechanical | TF3 | | and | T10 | | | |
| | | · . | and | | Extinguishing Dovices | FaaO | |
| engineering | 0 | apparatus | | F30 | Extinguishing Devices | F23Q | |
| | TE 0 | Thermal | | T 44 | D " 0" E 0 " I | | |
| Mechanical | TF3 | processes | and | | Domestic Stoves For Solid | - 0.4 | |
| engineering | 0 | apparatus | | F30 | Fuels | F24 | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T12 | | | |
| engineering | 0 | apparatus | | F30 | Refrigeration Systems | F25B | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T13 | | | |
| engineering | 0 | apparatus | | F30 | Ice | F25C | |
| | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T14 | | | |
| engineering | 0 | apparatus | | F30 | Furnaces ovens | F27 | |
| 3 3 3 | | Thermal | | | | | |
| Mechanical | TF3 | processes | and | T15 | | | |
| engineering | 0 | apparatus | aa | F30 | Heat Exchange | F28 | |
| Mechanical | TF3 | Mechanical | | T01 | Tout Exchange | . 20 | |
| engineering | 1 | elements | | F31 | Fluid Pressure Actuator | F15 | |
| Mechanical | TF3 | Mechanical | | T02 | TIMIL TESSUIT ACIUATOL | 1 10 | |
| | | | | | Engineering Elter or Unite | E16 | |
| engineering | 1 | elements | | F31 | Engineering Elts or Units | F16 | |
| Mechanical | TF3 | Mechanical | | T03 | Stroring Distributing Non | | |
| engineering | 7 | elements | | F31 | Solids | F17 | |
| Mechanical | TF3 | Mechanical | | T04 | | | |
| engineering | 1 | elements | | F31 | Mechanical Control Systems | G05G | |
| Mechanical | TF3 | | | T01 | | | |
| engineering | 2 | Transport | | F32 | Vehicles | B60 | |
| Mechanical | TF3 | | | T02 | | | |
| engineering | 2 | Transport | | F32 | Railways | B61 | |
| Mechanical | TF3 | • | | T03 | • | | |
| engineering | 2 | Transport | | F32 | Land Vehicles | B62 | |
| Mechanical | TF3 | Transport | | T04 | Ships | B63B | |
| Modifical | 110 | Tanoport | | | | כטטכ | |





| AND INNOVATION | | CY STUDIES | | _ | A COLUMN | |
|-----------------|----------|------------|-------|-----------------------------|----------|--|
|) | 2 | | F32 | | | |
| Mechanical 1 | TF3 | | T05 | | | |
| engineering 2 | 2 | Transport | F32 | Launching of Vessels | B63C | |
| | TF3 | • | T06 | | | |
| | 2 | Transport | F32 | Weapons on Vessels | B63G | |
| | TF3 | | T07 | | | |
| | 2 | Transport | F32 | Marine Propulsion | B63H | |
| | TF3 | тапэроп | T08 | Warrie Fropulsion | D0311 | |
| | 2 | Transport | F32 | Auxilaries on Vessel | B63J | |
| | Z TF3 | Transport | | Auxiliaries on vessei | D033 | |
| | _ | T | T09 | A: | D04 | |
| | 2 | Transport | F32 | Aircraft | B64 | |
| | TF3 | Furniture, | T01 | Furniture and Domestic | | |
| | 3 | games | F33 | Equipment | A47 | |
| | TF3 | Furniture, | T02 | | | |
| Other fields 3 | 3 | games | F33 | Sports and Games | A63 | |
| | | Other | | | | |
| | TF3 | consumer | T01 | | | |
| Other fields 4 | 4 | goods | F34 | Tobacco | A24 | |
| | | Other | | | | |
| | TF3 | consumer | T02 | | | |
| | 4 | goods | F34 | Shirts | A41B | |
| | • | Other | | - C | | |
| - | TF3 | consumer | T03 | | | |
| | - | | | Caracta | A44C | |
| Other fields 4 | 4 | goods | F34 | Corsets | A41C | |
| | | Other | | | | |
| | TF3 | consumer | T04 | | | |
| Other fields 4 | 4 | goods | F34 | Outerwear | A41D | |
| | | Other | | | | |
| | TF3 | consumer | T05 | | | |
| Other fields 4 | 4 | goods | F34 | Suspenders | A41F | |
| | | Other | | | | |
| 7 | TF3 | consumer | T06 | | | |
| Other fields 4 | 4 | goods | F34 | Wigs | A41G | |
| | | Other | | | | |
| | TF3 | consumer | T07 | | | |
| | 4 | goods | F34 | Headwear | A42 | |
| 231 113130 | - | Other | | | | |
| - | TF3 | consumer | T08 | | | |
| | 4 | goods | F34 | Footwear | A43B | |
| Outer fields 4 | 7 | | 1 34 | i ootweai | ハサンレ | |
| | TE2 | Other | TOO | | | |
| | TF3 | consumer | T09 | 1 | | |
| Other fields 4 | 4 | goods | F34 | Laces | A43C | |
| | | Other | | | | |
| | TF3 | consumer | T10 | | | |
| Other fields 4 | 4 | goods | F34 | Fasteners and Braselets | A44 | |
| | | Other | | | | |
| | TF3 | consumer | T11 | | | |
| Other fields 4 | 4 | goods | F34 | Hand or Travelling Articles | A45 | |
| | | Other | | <u> </u> | | |
| - | TF3 | consumer | T12 | | | |
| | 4 | goods | F34 | Brushes | A46B | |
| | • | Other | 1 0-7 | 2.401100 | , (105 | |
| - | TF3 | consumer | T13 | | | |
| | | | | Mothodo For Life Conting | AGOD | |
| TOTHEL HEIOS 14 | 4 | goods | F34 | Methods For Life-Saving | A62B | |





| AND INNOVATI | ON POL | ICY STUDIES | | | * * * | |
|----------------|--------|-------------|-------------|------------------------------|-------|--|
| | | Other | | | | |
| | TF3 | consumer | T14 | Other Life saving and | | |
| Other fields | | | F34 | , | A99Z | |
| Other fields | 4 | goods | F34 | Amusement | A99Z | |
| | | Other | | | | |
| | TF3 | consumer | T15 | | | |
| Other fields | 4 | goods | F34 | Bookbinding | B42 | |
| | | Other | | 3 | | |
| | TF3 | consumer | T16 | | | |
| Oth an fields | | | I | Muitin or los of laws and a | D40 | |
| Other fields | 4 | goods | F34 | Writing Implements | B43 | |
| | | Other | | | | |
| | TF3 | consumer | T17 | | | |
| Other fields | 4 | goods | F34 | Decorative Arts | B44 | |
| | | Other | | | | |
| | TF3 | consumer | T18 | | | |
| Other fields | | | F34 | Coddlery and Unhalatery | B68 | |
| Other fields | 4 | goods | F34 | Saddlery and Upholstery | D00 | |
| | | Other | | | | |
| | TF3 | consumer | T19 | | | |
| Other fields | 4 | goods | F34 | Trimmings | D04D | |
| | | Other | | | | |
| | TF3 | consumer | T20 | | | |
| Other fields | 4 | goods | F34 | Laundering | D06F | |
| Other helds | 4 | | 1 34 | Laundening | D001 | |
| | | Other | | | | |
| | TF3 | consumer | T21 | | | |
| Other fields | 4 | goods | F34 | Wall Floor Covering | D06N | |
| | | Other | | | | |
| | TF3 | consumer | T22 | | | |
| Other fields | 4 | goods | F34 | Rope non electric cable | D07 | |
| Other fields | 7 | Other | 1 54 | Trope from electric cable | D01 | |
| | TEO | | T 00 | Ossilian Os Fassilian | | |
| | TF3 | consumer | T23 | Cooling Or Freezing | | |
| Other fields | 4 | goods | F34 | Apparatus | F25D | |
| | | Other | | | | |
| | TF3 | consumer | T24 | | | |
| Other fields | 4 | goods | F34 | Organs Harmoniums | G10B | |
| Guiloi iliolad | | Other | | ergane mannemanie | 0.02 | |
| | TF3 | | T25 | | | |
| 0.1 (1.1) | | consumer | | D: | 0400 | |
| Other fields | 4 | goods | F34 | Pianos | G10C | |
| | | Other | | | | |
| | TF3 | consumer | T26 | | | |
| Other fields | 4 | goods | F34 | Musical Instruments | G10D | |
| | | Other | | | | |
| | TF3 | consumer | T27 | Automatic Musical | | |
| Other fields | | | | | C10E | |
| Other fields | 4 | goods | F34 | Instruments | G10F | |
| | | Other | | | | |
| | TF3 | consumer | T28 | | | |
| Other fields | 4 | goods | F34 | Aids For Music | G10G | |
| | | Other | | | | |
| | TF3 | consumer | T29 | Electrophonic Musical | | |
| Other fields | | | F34 | | G10H | |
| Other neids | 4 | goods | г 34 | Instruments | GIUП | |
| | | Other | | | | |
| | TF3 | consumer | T30 | | | |
| Other fields | 4 | goods | F34 | Sound-Producing Devices | G10K | |
| | TF3 | Civil | T01 | | | |
| Other fields | 5 | engineering | F35 | Permanent ways | E01B | |
| Other fields | TF3 | Civil | T02 | Surfaces for roads and sport | | |
| | – ` | LOIVII | LIUZ | rounaces for toads and SDON. | | |





| AND INNOVATI | ON POL | ICY STUDIES | | _ | 2912.1 | |
|--------------|--------|-------------|-----|-------------------------------|--------|--|
| | 5 | engineering | F35 | grounds | | |
| | TF3 | Civil | T03 | | | |
| Other fields | 5 | engineering | F35 | Bridges | E01D | |
| | TF3 | Civil | T04 | | E01F | |
| Other fields | 5 | engineering | F35 | Platforms or refuge islands | 1 | |
| | TF3 | Civil | T05 | | E01F | |
| Other fields | 5 | engineering | F35 | Landing for helicopters | 3 | |
| | TF3 | Civil | T06 | | E01F | |
| Other fields | 5 | engineering | F35 | Draining of roads | 5 | |
| | TF3 | Civil | T07 | Protection again snow or | E01F | |
| Other fields | 5 | engineering | F35 | sand drifts | 7 | |
| | TF3 | Civil | T08 | | E01F | |
| Other fields | 5 | engineering | F35 | Road signs or traffic signals | 9 | |
| | TF3 | Civil | T09 | Sensitive and restricitng and | E01F | |
| Other fields | 5 | engineering | F35 | safety in roads | 1 | |
| | TF3 | Civil | T10 | | | |
| Other fields | 5 | engineering | F35 | Street Land Cleaning | E01H | |
| | TF3 | Civil | T11 | Hydraulic Eng. Foundations | | |
| Other fields | 5 | engineering | F35 | Soil-Shifting | E02 | |
| | TF3 | Civil | T12 | | | |
| Other fields | 5 | engineering | F35 | Water supply sewerage | E03 | |
| | TF3 | Civil | T13 | | | |
| Other fields | 5 | engineering | F35 | Building | E04 | |
| | TF3 | Civil | T14 | | | |
| Other fields | 5 | engineering | F35 | Locking Safing | E05 | |
| | TF3 | Civil | T15 | | | |
| Other fields | 5 | engineering | F35 | Openings in Building Ladder | E06 | |
| | TF3 | Civil | T16 | | | |
| Other fields | 5 | engineering | F35 | Earth Or Rock Drilling | E21 | |
| | TF3 | Civil | T17 | | | |
| Other fields | 5 | engineering | F35 | Other Subjects Building | E99Z | |

Appendix 4: Building description for International Patent Classification

Patents have fine grained information to describe the technologies that are combined by the applications. The International Patent Classification (IPC) is a hierarchical patent <u>classification</u> system used to classify the content of <u>patents</u> in a uniform manner. with approximately 70 000 subdivisions ¹⁰. Each subdivision is described with a short text

that we have collected.

Each classification symbol is of the form « A01B 1/00 » . The first letter represents the "section" consisting of a letter from A ("Human Necessities") to H ("Electricity"). Combined with a two-digit number, it represents the "class" (class A01 represents "Agriculture; forestry; animal husbandry; trapping; fishing"). The final letter makes up the "subclass" (subclass A01B represents "Soil working in agriculture or forestry; parts, details, or

¹⁰ https://www.wipo.int/classifications/ipc/en/





accessories of agricultural machines or implements, in general"). The subclass is followed by a one-to-three-digit "group" number, an oblique stroke and a number of at least two digits representing a "main group" or "subgroup"

(reference https://en.wikipedia.org/wiki/International_Patent_Classification)

For each classification symbol we have concatenated the description of all levels, rebuilding the IPC hierarchy. Each patent receives the concatenated description of different levels of its IPC codes.

A01B 1/00 will be described as: Soil working in agriculture or forestry; parts, details, or accessories of agricultural machines or implements, in general. Agriculture; forestry; animal husbandry; trapping; fishing. Human Necessities.

Details on the used methodology is given in: https://gitlab.com/cortext/patents/patstat//tree/version-2021/nomenclatures/ipc descriptions

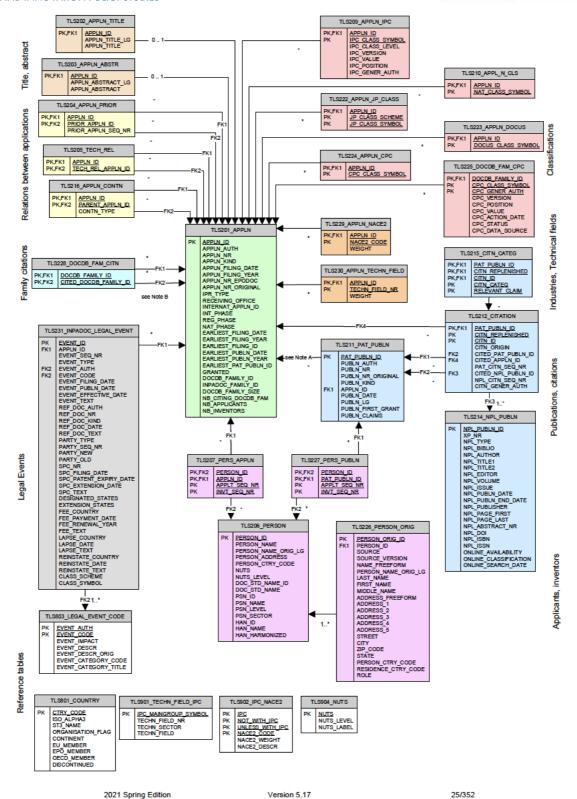




Appendix 5: Data model of PATSTAT2021

The data model shown below is the model of the PATSTAT 2021 database. The Patstat documentation is available in https://gitlab.com/cortext/patents/patstat//blob/version-2021/version_2021/DataCatalog_Global_v5.17.pdf





26