

Examiners' Report Paper F 2025

Part 1

Pursuant to Rule 6(6) IPREE, the Examination Board has decided to set the grade threshold for passing part 1 to 70% (35 marks) of the total achievable marks (50 marks) in that part.

The criteria for determining the threshold take into account that the paper is designed to test the declarative knowledge of the candidates that can be expected after one year of professional experience.

Question 1

Company DK is based in Copenhagen (Denmark) and sells fashion products worldwide. To protect a new product, an application DK-1 has been drafted in Danish. The abstract, description and drawings are complete. Claims are not yet drafted. DK needs to file today.

1.1 DK-1 can be validly filed in Danish at the EPO as a European patent application under the EPC.

TRUE – A European patent application can be filed in any language (Art. 14(2) EPC).

1.2 DK-1 can be validly filed without claims as a European patent application under the EPC.

TRUE – A European patent application can be validly filed without claims (R. 40(1) EPC; GL A-II 4.1).

1.3 DK-1 can be validly filed in Danish at the EPO under the PCT with the EPO as PCT receiving office.

FALSE – The EPO as receiving Office does not accept Danish as a language for filing international applications (R. 157(2) EPC; PCT-EPO GL A-VII 1.1; PCT AG, Annex C, EP).

Note: The answer to this question can be directly derived from a single source of the syllabus and therefore tests declarative knowledge.

1.4 DK-1 can be validly filed without claims under the PCT.

FALSE – An international application cannot be validly filed without at least one claim (Art. 11(1)(e) PCT; EPO-PCT GL A-II 4.1).

Note: Partial points were awarded when only one of the answers was incorrect.

Question 2

Company DK filed a European application DK-2 at the EPO last week and duly paid all fees. DK-2 has one claim.

2.1 DK-2 will be searched by a search division, which under no circumstances consists of more than two technically qualified members.

FALSE – DK-2 will be searched by a search division (Art. 17 EPC) composed of technically qualified members (R. 11(1) EPC). A search division can consist of more than two technically qualified members (GL B-I 2.2).

2.2 The examining division consists of three technically qualified members and can be enlarged by a legally qualified member.

TRUE – Explicit in Art. 18(2) EPC.

2.3 The examining division must be enlarged by a legally qualified member upon request of the applicant.

FALSE – There is no legal requirement for enlarging the examining division by a legally qualified member upon request of the applicant. Art. 18(2) EPC only requires that the examining division be enlarged if the examining division considers that the nature of the decision so requires.

2.4 If DK-2 is granted and then opposed, the opposition division must always include both legally and technically qualified members.

FALSE – Explicit in Art. 19(2) EPC.

2.5 Any appeal against examining division decisions related to DK-2 will be examined by a board consisting of at least two technically qualified members and at least one legally qualified member.

FALSE – Explicit in Art. 21(3)(c) EPC.

2.6 Decisions of the Legal Division are taken by one legally qualified member.

TRUE – Explicit in Art. 20(2) EPC.

Note: Partial points were awarded when only one of the answers was incorrect.

Question 3

Which of the following pieces of information is optional in the request for an international application under the PCT?

3.1 Title of the invention

FALSE – Required by R. 4.1(a)(ii) PCT.

3.2 Indications concerning the inventor where the national law of the designated states does not require that the name of the inventor be furnished at the time of filing a national application

TRUE – Explicit in R. 4.1(c)(i) PCT.

3.3 Name of the applicant

FALSE – Required by R. 4.1(a)(iii) in conjunction with R. 4.5(a)(i) PCT.

Question 4

Mr Bohr is the owner of two separate Danish companies R and S. He invented a revolutionary radiation device X and filed a national German patent application DE-X on 18.4.2024, with company R as applicant.

4.1 Company R can be named as single applicant when filing EP-X and validly claiming the priority of DE-X.

TRUE – The applicant of EP-X would be the same applicant, company R, as the applicant for the previous application DE-X. The “same applicant” requirement of Art. 87(1) EPC would be met.

Note: The twelve months period mentioned in Art. 87(1) EPC has not lapsed and priority of DE-X can be validly claimed until that date.

4.2 Company S can be named as single applicant when filing EP-X and validly claiming the priority of DE-X.

FALSE – Company S is neither the same applicant as the applicant for DE-X (which is company R) nor is company S the successor in title of company R. Hence, the “same applicant” requirement of Art. 87(1) EPC is not met.

Note: There is no indication of facts in the question that a transfer of rights took place before filing. The strong rebuttable presumption as mentioned in the GL A-III 6.1 does not change the fact that S is de facto neither applicant of DE-X nor the successor in title.

4.3 Companies S and R can be named as joint applicants when filing EP-X and validly claiming the priority of DE-X.

TRUE – EP-X may be filed by companies S and R as joint applicants under Art. 59 EPC. In the case of joint applicants filing EP-X, it is sufficient that one of the applicants, company R, is the previous application's applicant (GL A-III 6.1). The “same applicant” requirement of Art. 87(1) EPC would be met.

Note: The twelve months period mentioned in Art. 87(1) EPC has not lapsed and priority of DE-X can be validly claimed until that date.

Question 5

Company X filed a German patent application DE-X on 18.4.2024. X would like to file a European application EP-X under the EPC. The last day for filing EP-X while validly claiming the priority of DE-X is: ...

22.04.2025.

18.04.2024 + 12 months (Art. 87(1) EPC, R.131(4) EPC) -> 18.04.2025 which is Good Friday. As the EPO is closed on that day, the period is extended to the next working day (R. 134(1) EPC) which is 22.04.2025.

Question 6

For European patent EP-B, the date of the publication of the mention of the grant is 5.2.2025. Independent claim 1 defines a device having features A and B. Independent claim 2 defines a device having features C and D.

Company Z is worried that it infringes both claims 1 and 2 in EPC contracting states, and asks you to bring an opposition case before the EPO against EP-B.

The following facts apply: claims 1 and 2 are not unitary; feature C of claim 2 is technically unclear. Prior art D1 dated 1.1.1950 discloses a device with features A and B. Z has fully documented proof of a public prior use of invention C and D in the USA before the effective date of filing of EP-B.

6.1 EP-B can be successfully opposed on the grounds of lack of unity under Article 82 EPC. The proprietor must thus delete either claim 1 or claim 2 during opposition proceedings.

FALSE – Lack of unity is not a ground for opposition under Art. 100 EPC.

6.2 Claim 2 is in violation of Article 84 EPC and must be deleted or amended for this reason.

FALSE – Lack of clarity is not a ground for opposition under Art. 100 EPC.

6.3 EP-B can be successfully opposed owing to lack of novelty of the subject-matter of claim 1 over D1, and EP-B cannot be maintained unamended.

TRUE – Lack of novelty is a ground for opposition under Art. 100(a) EPC in conjunction with Art. 52(1) and 54 EPC. The subject-matter of claim 1 lacks novelty over D1. The opposition against EP-B will thus be successful, and EP-B cannot be maintained unamended.

6.4 A public prior use outside the territories of the EPC contracting states cannot be cited as prior art in opposition procedures before the EPO.

FALSE – There is no legal basis to exclude a public prior use outside the territories of the EPC contracting states. According to Art. 54(2) EPC, the state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application.

Note: Partial points were awarded when only one of the answers was incorrect.

Question 7

For European patent EP-B, the date of the publication of the mention of the grant in the European Patent Bulletin is 5.2.2025. The deadline for filing an opposition against EP-B is: ...

5.11.2025

05.02.2025 + 9 months (Art. 99(1), R.131(4) EPC) -> 05.11.2025 (Wednesday)

The opposition fee, if the opposition is filed today, amounts to: ...

880 EUR

Art. 2 Rfees, Item 10

Note: Partial points were awarded when only one of the answers was incorrect.

Question 8

Company Kung-Fu based in Shanghai (PR of China) would like to file and prosecute applications before the EPO. Kung-Fu will be named as applicant. For which actions before the EPO is representation by a professional representative required?

8.1 Filing an EP application having a Chinese priority claim

FALSE – Company Kung-Fu is a legal person not having their residence or principal place of business in a Contracting State and thus needs to be represented by a professional representative and act through the professional representative in all proceedings before the EPO. The act of filing a European patent application is excluded from this requirement (Art. 133(2) EPC; GL A-VIII 1.1).

8.2 Filing translations from Chinese into an EPO official language after filing

TRUE – After filing, Kung Fu needs to act through the professional representative (Art. 133(2) EPC; GL A-VIII 1.1).

8.3 Paying the filing fee

FALSE – Fees may be validly paid by any person (GL A-X 1).

8.4 Paying renewal fees

FALSE – Fees may be validly paid by any person (GL A-X 1).

8.5 Replying to a communication of the examining division

TRUE – After filing, Kung Fu needs to act through the professional representative (Art. 133(2) EPC; GL A-VIII 1.1).

8.6 Filing an appeal in the case of refusal of an application by the examining division

TRUE – After filing, Kung Fu needs to act through the professional representative (Art. 133(2) EPC; GL A-VIII 1.1).

Note: Partial points were awarded when only one of the answers was incorrect.

Question 9

Your client Ms Y is a natural person resident in Serbia with ten pending European patent applications as applicant. Ms Y has the following specific questions about oral proceedings at the EPO.

9.1 Oral proceedings can take place before the search division if claims are deemed unclear.

FALSE – Art. 116 EPC which defines the legal framework for oral proceedings before the departments of the EPO does not provide for oral proceedings before search divisions.

9.2 Ms Y can, as applicant and thus a party to the proceedings, attend any oral proceedings related to her ten applications.

TRUE – Ms Y is a party to the proceedings and may thus attend the oral proceedings related to her ten applications because she would be summoned to attend such oral proceedings, R. 115 EPC.

9.3 The fee for requesting oral proceedings before the examining division is 400 euros.

FALSE – The EPC does not define any fee for requesting oral proceedings.

9.4 Ms Y can, as a member of the public, attend any oral proceedings before EPO opposition divisions where her competitors are patentees.

FALSE – Oral proceedings before EPO opposition divisions are normally public, but there are exceptions as defined by Art. 116(4) EPC and the GL E-III 8.1.

9.5 Ms Y can, as a member of the public, attend any oral proceedings before EPO examining divisions where her competitors are applicants.

FALSE – Oral proceedings before EPO examining divisions are not public (Art. 116(3) EPC).

9.6 Not attending when duly summoned to oral proceedings before the examining division will automatically result in refusal of the application.

FALSE – The legal consequence of not attending when duly summoned to oral proceedings before the examining division is that the proceedings may continue without the applicant (R. 115(2) EPC). This does not automatically result in refusal of the application.

Note: Partial points were awarded when only one of the answers was incorrect.

Question 10

During a holiday period, applicant X failed to reply in time to an official communication under Rule 71(1) EPC from the examining division concerning application EP1. X received another communication from the EPO yesterday: EP1 was filed on 1.2.2018 and is now being deemed to be withdrawn.

What can be done to remedy the situation effectively and at the lowest cost?

10.1 Request further processing under Article 121 EPC, pay the relevant fee and reply to the communication.

TRUE – The communication from the EPO is a notification under R.112(1) EPC in relation to the missed time limit under R. 71(1) EPC. Further processing is available (R. 135(1) and (2) EPC) and the only valid option to remedy the deemed withdrawal of EP1 (Art. 121(3) EPC). Since further processing is the only valid option (see also reasoning with regard to the other statements of this question), it is also the option at lowest cost.

10.2 Request re-establishment of rights under Article 122 EPC.

FALSE – Re-establishment of rights is ruled out because further processing is available (R. 136(3) EPC).

10.3 Call the chair of the examining division and request the setting of a new four-month time limit.

FALSE – Calling the chair cannot remedy the deemed withdrawal of EP1. There is no legal provision for the chair to set a new four-month time limit after a notification of loss of rights under R. 112(1) EPC.

10.4 File a divisional application based on EP1 as the parent application.

FALSE – EP1 is deemed withdrawn and thus not pending (GL. A-IV 1.1.1). A divisional application cannot be validly filed (R. 36(1) EPC).

Note: To validly file a divisional application, the loss of rights with regard to EP1 has to be remedied by requesting further processing as stated under point 10.1. This solution would imply higher costs (fees for further processing and for filing the divisional application).

10.5 Request that the application be accelerated under the PACE programme.

FALSE – A PACE request cannot remedy the deemed withdrawal of EP1.

Question 11

Company Y intends to file a European patent application with the EPO for invention X next week. It is very important to the single inventor Mr Secret to remain anonymous for personal reasons.

11.1 Can the inventor be kept secret from the public?

YES – The EPO needs to be informed in writing that the inventor waives the right to be mentioned (R. 20(1) EPC; GL A-III 5.2).

Question 12

A European patent has been granted. The patent has a 20 year term.

12.1 The 20 year term is calculated from the date of filing.

TRUE – Art. 63(1) EPC

12.2 The 20 year term is calculated from the date of publication of the granted patent.

FALSE – Art. 63(1) EPC

12.3 The 20 year term is calculated from the publication of the application.

FALSE – Art. 63(1) EPC

12.4 The 20 year term is calculated from the date of earliest priority.

FALSE – Art. 63(1) EPC (note: the effect of the priority right as defined Art. 89 EPC does not extend to the date of filing referred to in Art. 63(1) EPC)

12.5 The 20 year term can be extended in a specific contracting state if certain circumstances are fulfilled.

TRUE – Art. 63(2) EPC

Question 13

Danish company X and Swedish company Y are active in the same technical field and have common business interests and a common competitor Z. X and Y are fully independent entities.

13.1 X and Y may jointly file a patent application under the EPC.

TRUE – Art. 59 EPC

13.2 X and Y may jointly file an opposition against a granted patent of Z.

TRUE – GL D-I 4

Question 14

Company Q in Greece has developed a complex olive oil press with very many alternative embodiments. The application is now finalised for filing and contains 10 description pages, 5 pages with drawings and 15 pages with 75 claims. All claims are considered necessary at this stage. The application relates to one invention only. Q wants to pursue a filing route whereby the EPO will draw up a full search report for all claims.

14.1 Filing a European patent application under the EPC would be cheaper, i.e. incur lower fees, than filing an international application under the PCT.

NO – The PCT route is cheaper because the claims fee under the EPC (R. 45(1) EPC and RFees 2.15), which is due in respect of the sixteenth and each subsequent claim, is **far greater** than the total amount of fees payable under the PCT.

Note:

Fees under the EPC:

- Filing fee (RFees 2.1): 135 EUR (online filing) or 285 EUR (no online filing)
- Search fee (RFees 2.2): 1.520 EUR
- Claims fee (RFees 2.15): **26.750 EUR**
(275 EUR for each of claims 16 to 50 and 685 EUR for each of claims 51 to 75)

Fees under the PCT:

- Transmittal fee (PCT AG, Annex C): 150 EUR (when EPO is rO, lower for other rO)
- International filing fee (PCT AG, Annex C): 1.417 EUR (reductions apply for online filing)
- International search fee (PCT AG, Annex D): 1.845 EUR
- But no claims fee under the PCT

Question 15

Companies A and B each validly file, independently of each other, a European application for the same invention X on 1.2.2025 at the EPO. X is patentable under the EPC.

15.1 Both A and B will be granted a patent for X.

TRUE – GL G-IV 5.4, last sentence.

15.2 Neither A nor B can be granted a patent for X.

FALSE – GL G-IV 5.4, last sentence.

15.3 A can be granted a patent for X only if B withdraws their application before publication and vice versa.

FALSE – GL G-IV 5.4, last sentence.

15.4 A patent can only be granted if A and B mutually request to be considered as joint applicants for both applications.

FALSE – GL G-IV 5.4, last sentence.

Part 2

It was decided by the Examination Board to neutralise question 10 of part 2. No points were awarded for this question and the maximum number of achievable marks for part 2 was reduced from 50 to 47 marks.

Pursuant to Rule 6(6) IPREE, the Examination Board has decided to set the grade threshold for passing part 2 to 70.2% (33 marks) of the total achievable marks (47 marks) in that part.

The criteria for determining the threshold take into account that the paper is designed to test the declarative knowledge of the candidates that can be expected after one year of professional experience.

Question 1

Claim 1 is in conformity with Article 84 EPC.

NO – The feature “very light metal alloy significantly lighter than a steel alloy” comprises relative terms without well-recognised meaning. It is the only feature used to distinguish the subject-matter of claim 1 from the prior art such that it is objected to under Art. 84 EPC (GL F-IV 4.6.1).

Question 2

Claim 2 is not clear as required by Article 84 EPC because:

2.1 Claim 2 does not define the specific metal alloys to use for the frame.

FALSE – It is not necessary to include all details of the specific metal alloys in the independent claim. A certain degree of generalisation is permitted (GL F-IV 4.5.3).

2.2 Claim 2 does not define how the frame can be produced.

FALSE – A specific production method of the frame is not needed to define the invention and is therefore not an essential feature to be specified in the independent claim. It is implicit that the frame has been produced. According to the description of Bicycle-1, suitable production processes are well-known to the skilled person. Implicit features do not need to be mentioned in the claim (GL F-IV 4.5.4).

2.3 The wording “preferably below 3” renders claim 2 unclear.

FALSE – The term “preferably” defines the feature “below 3” as an optional feature. The wording is allowable because it does not introduce any ambiguity. The preferred range “below 3” does not contradict the non-optional range “below 5” and leads to a restriction of the subject-matter of the claim (GL F-IV 4.9).

2.4 Claim 2 is missing an essential feature because a brake system is always necessary for a bicycle.

FALSE – The description of Bicycle-1 as filed states that a “bicycle according to the present invention may be provided with a brake system as often required by local law”. A brake system is thus not

always necessary. A brake system is also not essential to achieve a technical effect underlying the solution of the technical problem of providing a bicycle lighter in weight (GL F-IV 4.5.2).

2.5 None of the answers A [2.1] to D [2.4] is correct.

TRUE – Implicit from the answers to statements 2.1 to 2.4.

Question 3

Claim 4 is in conformity with Article 84 EPC notwithstanding any clarity issues of claim 2.

NO – Claim 4 defines that “the frame consists of an aluminium alloy”. This wording implies that the presence of any other material than an aluminium alloy is excluded (GL F-IV 4.20). However, claim 4 is dependent on claim 3, and claim 3 defines that “the frame is made of a titanium alloy”. This inconsistency renders claim 4 unclear.

Question 4

The subject-matter of claim 1, notwithstanding any clarity issues, is novel over the prior art D1 to D4.

4.1 D1

TRUE – Notwithstanding the fact that the wording “the frame is very light metal alloy significantly lighter than a steel alloy” is unclear, it excludes the option that the frame is made of a steel alloy. The bicycle of D1 has a steel alloy frame and no other material is disclosed.

4.2 D2

TRUE – D2 does not disclose a transportation device.

4.3 D3

FALSE – D3 is prior art under Art. 54(2) EPC and discloses a transportation device (“big truck”) comprising a frame (“frame of the truck”), two wheels (“wheels”), seating means (“seats”), steering means (“steering wheel”) and a pedal system for propulsion (“pedals controlling an engine for propulsion”). The frame of D3 is made of an aluminium alloy (according to D2 illustrating the common general knowledge, aluminium alloys have a density of 2.7), which is a very light metal alloy significantly lighter than a steel alloy (according to D2, steel alloys have a density of 7.9).

Note: It is noted that claim 1 is not limited to a transportation device with only two wheels, see GL F-IV 4.20. A claim directed to an apparatus “comprising” certain features is interpreted as meaning that it includes those features, but that it does not exclude the presence of other features.

4.4 D4

FALSE – D4 is prior art under Art. 54(3) EPC and discloses a transportation device (“bicycle”) comprising a frame (“frame”), two wheels (“two wheels”), seating means (“a saddle”), steering means (“handlebars for steering”) and a pedal system for propulsion (“pedals for propulsion”). The frame of D4 is made of an titanium alloy having a density of 4.5. The titanium alloy is a very light metal alloy significantly lighter than a steel alloy (according to D2, steel alloys have a density of 7.9).

Question 5

The subject-matter of claim 2, notwithstanding any clarity issues, is novel over the prior art D2 to D4.

5.1 D2

TRUE – D2 does not disclose a bicycle.

5.2 D3

TRUE – D3 does not disclose a bicycle comprising handlebars for steering.

5.3 D4

FALSE – D4 is prior art under Art. 54(3) EPC and discloses a bicycle (“bicycle”) comprising a frame (“frame”), two wheels (“two wheels”), a saddle (“a saddle”), handlebars for steering (“handlebars for steering”) and pedals for propulsion (“pedals for propulsion”). The frame of D4 is made of a titanium alloy with a density of 4.5 which is below 5. The feature “preferably below 3” in claim 2 has no limiting effect because it is to be regarded as entirely optional (GL F-IV 4.9).

Question 6

The subject-matter of claim 3, notwithstanding any clarity issues, is novel over the prior art D2 to D4.

6.1 D2

TRUE – Claim 3 is dependent on claim 2 which defines a bicycle. D2 does not disclose a bicycle.

6.2 D3

TRUE – Claim 3 is dependent on claim 2 which defines a bicycle comprising handlebars for steering. D3 does not disclose a bicycle comprising handlebars for steering.

6.3 D4

FALSE – The frame of D4 is made of a titanium alloy as defined by claim 3. Claim 3 is dependent on claim 2. Concerning the features of claim 2 which are disclosed by D4, reference is made to point 5.3.

Question 7

Order the following elements to reflect the correct sequence for examining the inventive step of an invention claimed at the EPO.

Correct order:

- Define closest prior art
- Establish how the closest prior art differs from the claimed subject-matter
- Define technical effect
- Define objective technical problem
- Decide if proposed solution is obvious to a person skilled in the art in view of the prior art (GL G-VII 5, 5.1 and 5.2)

Question 8

When discussing inventive step with the EPO examining division in relation to claim 3, which document can be considered to form the closest prior art?

Selection from:

- D1
- D2

D1 – D1 is directed to a bicycle and is thus from the same technical field as the subject-matter of claim 3, whereas D2 is a rather generic technical encyclopedia. When comparing the two documents, the bicycle of D1 requires the minimum structural modifications to arrive at the subject-matter of claim 3 (GL G-VII 5.1).

Question 9

Amended claim 1 is in conformity with Article 84 EPC.

YES – There are no non-conformities with regard to Art. 84 EPC.

Question 10

Amended claim 4 is a dependent claim.

NEUTRALISED – It was decided by the Examination Board to neutralise this question. No points were awarded for this question and the maximum number of achievable marks for part 2 was reduced from 50 to 47 marks. The grade threshold for passing of part 2 was set to 33 marks (70.2% of 47 marks).

Question 11

The subject-matter of amended claim 6 is novel over the prior art D4.

NO – D4 is prior art under Art. 54(3) EPC and discloses a bicycle frame (“bicycle, comprising a frame”) that it is made of a titanium alloy (“titanium alloy frame”).

Question 12

The subject-matter of amended claim 2 is novel over the prior art documents D1 to D4.

12.1 D1

TRUE – D1 does not disclose a magnesium alloy.

12.2 D2

TRUE – D2 does not disclose a bicycle.

12.3 D3

TRUE – D3 does not disclose a magnesium alloy.

12.4 D4

TRUE – D4 does not disclose a magnesium alloy.

Question 13

Amended claims 1 and 2 are in conformity with Article 123(2) EPC.

13.1 Claim 1

YES – The basis for amended claim 1 is claim 2 as filed combined with the statements “[p]referably, the frame of the bicycle is made of an aluminium alloy” and “[s]uch alloys have a density below 5” in the description of Bicycle-1 as filed.

13.2 Claim 2

NO – There is no disclosure of a magnesium alloy in Bicycle-1 as filed.

Question 14

Amended claims 3 and 5 are in conformity with Article 123(2) EPC.

14.1 Claim 3

NO – There is no disclosure of a disc brake system in Bicycle-1 as filed.

14.2 Claim 5

NO – There is no disclosure in Bicycle-1 as filed that wheels are made of a titanium alloy.

Question 15

Amended claims 4 and 6 are in conformity with Article 123(2) EPC.

15.1 Claim 4

YES – Basis for replacing the titanium alloy by an aluminium alloy is provided by the statement “[p]referably, the frame of the bicycle is made of an aluminium alloy or a titanium alloy” in the description of Bicycle-1 as filed. For the other features of the claim, reference is made to point 13.1.

15.2 Claim 6

YES – The last paragraph of the description of Bicycle-1 as filed provides the basis for the generalised concept of a bicycle frame without the other features of the bicycle. Basis for the titanium alloy is provided by the statement “[p]referably, the frame of the bicycle is made of [...] a titanium alloy” in the description of Bicycle-1 as filed.

Amended claims filed during substantive examination

1. A bicycle comprising a frame, two wheels, a saddle, handlebars for steering and pedals for propulsion, characterised in that the frame is made of an aluminium alloy.
2. A bicycle comprising a frame, two wheels, a saddle, handlebars for steering and pedals for propulsion, characterised in that the frame is made of a magnesium alloy.
3. The bicycle of claim 1, further characterised in that it is provided with a disc brake system.
4. The bicycle of claim 1, characterised in that the frame is made of a titanium alloy instead of an aluminium alloy.
5. The bicycle of claim 1, characterised in that the two wheels are made of a titanium alloy.
6. A bicycle frame, characterised in that it is made of a titanium alloy.

Important: The pages following the present page are merely a repetition of the already provided European patent application Bicycle-1 and the available prior art D1 to D4.

European patent application Bicycle-1 as filed

Filed 1.1.2025 at the EPO. No priority claimed.

Description.

The present invention relates to bicycles as widely known and used around the world for transportation. Bicycles are also used in sporting events at private and professional level.

D1 shows a bicycle according to the prior art.

The bicycle of D1 essentially has a steel alloy frame, two wheels, a saddle, handlebars for steering and pedals for propulsion.

Bicycles of D1 are relatively heavy and thus hard and strenuous to drive uphill.

The present invention seeks to overcome this problem and it is an objective to provide a bicycle lighter in weight than those of D1.

The invention is defined by independent claims 1 and 2.

Dependent claims 3-4 set out various preferred embodiments. Preferably, the frame of the bicycle is made of an aluminium alloy or a titanium alloy. Such alloys have a density below 5 or even for some below 3. Density is commonly and herein expressed in grams per cubic centimetre.

A bicycle according to the present invention may be provided with a brake system as often required by local law.

Bicycle frames may be welded together from individual tubes or moulded in suitable forms by processes known to a skilled person.

Bicycle frames are often marketed & sold separately and then assembled by retailers or private individuals using wheels, a saddle, handlebars, pedals etc. from other sources. Therefore, only the bicycle frame itself is considered essential for the present invention.

Claims:

1. A transportation device comprising a frame, two wheels, seating means, steering means and a pedal system for propulsion, characterised in that the frame is made of a very light metal alloy significantly lighter than a steel alloy.
2. A bicycle comprising a frame, two wheels, a saddle, handlebars for steering and pedals for propulsion, characterised in that the frame is made of a metal alloy with a density below 5 and preferably below 3.
3. A bicycle as claimed in claim 2, further characterised in that the frame is made of a titanium alloy.
4. A bicycle as claimed in claim 3, further characterised in that the frame consists of an aluminium alloy.

Available prior art

D1

Published 1970

The bicycle of D1 essentially has a steel alloy frame, two wheels, a saddle, handlebars for steering and pedals for propulsion. A bicycle is often provided with a brake system in the form of disc brakes or rim brakes which each form well known alternatives for bicycle brake systems. Some bicycles e.g. for closed track racing have no brakes.

D2

Prior art technical encyclopaedia published 1990.

Aluminium is a metal with element number 13. Density for pure aluminium and its alloys is 2.7.

Titanium is a metal with element number 22. Density for pure titanium and its alloys is 4.5.

Magnesium is a metal with element number 12. Density for pure magnesium and its alloys is 1.7.

Iron is a metal with element number 26. Iron is the predominant component in steel alloys. Steel alloys are having a density at 7.9.

It is generally known that an alloy is defined to be a mixture of chemical elements of which at least one is metal.

D3

Prior art published 1997

A big truck is shown with steering wheel, pedals controlling an engine for propulsion, seats and wheels.

The structural parts of heavy trucks are traditionally made from steel alloys. It has been found that significant weight reduction is possible by employing an aluminium alloy for the frame of the truck.

D4

European patent application filed 15.7.2023 and published 15.1.2025. D4 is presently pending.

D4 discloses a bicycle, comprising a frame, two wheels, a saddle, handlebars for steering and pedals for propulsion. D4 sets out that bicycle frames of steel alloys are traditionally very heavy.

Especially for competition purposes. D4 suggests to replace the heavy steel frame with a titanium alloy frame with a density of 4.5.