

External examiner's review of a Master's thesis

Student's name and surname: Dennis Ugochukwu Uwaezuoke

Degree programme:

Degree course: Polymer Engineering

Specialization

(if the degree course is divided into specializations):

Department: UIP

Supervisor of the Master's thesis: Prof. Ing. Pavel Mokrejš, Ph.D.

External examiner of the Master's thesis: Ing. Ondřej Krejčí, Ph.D.

Academic year: 2023/2024

Title of the Master's thesis:

Preparation of soaps from animal fat

Assessment of the Master's thesis using the ECTS grading scale:

Assessment criteria	Assessment according to the ECTS
1. Fulfilment of the assignment criteria	B – Very good
2. Level of quality of the formal aspects of the thesis, including the level of linguistic quality	C – Good
3. Amount, topicality and relevance of the literature sources consulted	B – Very good
4. Description of experiments and implementation methods	D – Satisfactory
5. Level of quality of processing of the results	D – Satisfactory
6. Interpretation of the results achieved and discussion thereof	C – Good
7. Formulation of the conclusion of the thesis	C – Good

Select the option the submitted thesis for defence and propose the following assessment:

C – Good

Comments on the Master's thesis:

The diploma thesis deals with the use of non-traditional sources of fats for the preparation of soaps and it was written on 80 pages. The thesis cites 45 sources and is supplemented by a number of figures and tables. The theoretical part of the work is well structured and discusses fats and their use for soap production, including important properties and requirements placed on them. The level of theoretical study is good, but the impression is spoiled by unfinished sentences and sentences that do not make sense.

The practical part of the work evaluates the effect of the amount of KOH, saponification temperature and amount of NaCl on the final weight and most important properties of the prepared soaps using the method of factorial experiments (DOE). The practical part is also well divided into chapters. I also positively evaluate the clarity of the results in the tables and graphs. However, I must point out the often missing units in the graphs and the number of minor grammatical mistakes. Also, the formatting and editing of the text is sometimes different from the rest of the work. Another shortcoming of some methods is the incomplete explanation of their calculation (e.g. foam capacity and stability). On the contrary, the author's effort to compare his results with other researches is a big plus. The last, more serious shortcoming is the incompleteness of the discussed results, when a description of the influence of one of the three monitored factors is often missing, or some results (regression equations, p-value) presented in the thesis are hardly mentioned in the discussion.

In conclusion, I state that the thesis accomplish the set goals and satisfy the requirements set for diploma theses, therefore I recommend it for defense.

Questions to be asked by the external examiner of the Master's thesis:

- 1) How much pure fat was obtained from the original weight of approx. 250 g of raw material and how much pure fat was used for saponification?
- 2) How did you dose KOH for saponification and how concentrated was the solution? Did the addition of chemicals vary according to the amount of the original raw material?
- 3) How did you calculate foam capacity and stability?
- 4) What is the effect of temperature on the weight of dried soap?
- 5) What is the effect of KOH on the total alkalinity of the soap?

In Zlín on 23. 05. 2024

Signature of the external examiner of the Master's thesis

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