Report Outline for
Creamy and Delicious Chocolate Fudge

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Notes:

1. This example only includes a single potential topic. Student submissions must include 3 potential topics.
2. Clearly expressed point form notes are acceptable, as illustrated below.
3. Include any references that you have already looked up
4. We're looking for evidence that you've thought about how you would approach these topics and what interesting materials science you can explore related to them

1 Introduction

This report will focus on the fascinating microstructure-property relationships responsible for the delicious creamy texture that is, in the author's opinion, essential for a high quality fudge.

2 The Mouthfeel of a Top Quality Fudge

In a similar way that comfort with usage of the term *mouthfeel* is highly polarized a clear consensus on what constitutes good quality fudge has not been established. However, it is the author's strongly held view that good fudge must have a smooth texture in the mouth. This is achieved by ensuring minimal sucrose grain growth during manufacturing. This paper will explore the techniques that are employed to ensure a fine microstructure in good fudge.

2.1 Eliminating Seed Crystal Formation on Boiling Vessel

- this section will explore the need to carefully remove and redissolve any sugar crystals that form on the pot when the fudge is being boiled down. - this reference will be useful here[1]

2.2 Rapid Solidification by Marble Slab Casting

- this section will explore how rapid cooling favours nucleation over grain growth of sucrose grains, causing fine grained, *smooth* texture.

2.3 Grain Growth Inhibiting Additions

It is common to add a small fraction of corn syrup (glucose syrup) to fudge to inhibit the growth of sucrose grains. Corn syrup contains other sugars that interfere with molecular arrangement of sucrose into crystals. This section will elaborate on this fascinating bit of science.

3 A Sticky Conclusion

This section will provide a witty conclusion to the paper.

References

[1] Richard W Hartel, Joachim H von Elbe, Randy Hofberger. "Caramel, Fudge and Toffee" in *Confectionery Science and Technology*. Springer Chemistry and Materials Science eBooks, 2017, pp.273-299.

4 Appendix

- not necessary, but anything extra can go here in the final report