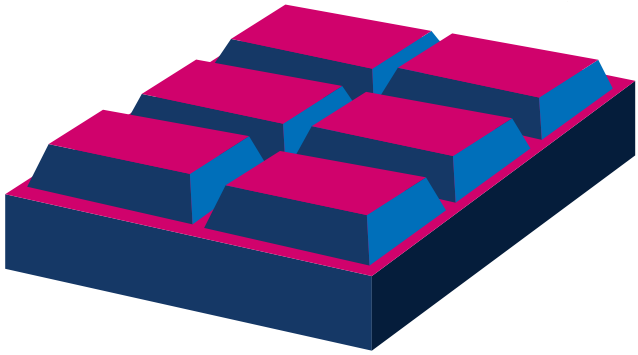
Formech
Perfectly formed



Chocolate Bar Mould

Completion time: 2-3 Lessons

Materials and Resources:

- Pencil, paper, ruler, internet access for research (optional) and washing up facilities
- Suitable mould making materials (e.g. wood, MDF, foam or clay)
- Tools and/or machinery necessary for shaping mould materials, melted chocolate
- Additional materials for adding 3D detailing to the mould; e.g. string, thick card, glue etc.
- Formech vacuum forming machine and Polyethylene terephthalate (PETG) sheet plastic (or other suitable food safe plastic)
- https://formech.com/case-studies/introduction-working-formechs-compac-mini-vacuum-forming-machine
- https://formech.com/case-studies/vacuum-forming-artisan-chocolatier

Skills at a glance:

Mathematics
Measurement, scale

Language
Discussion, reading, listening

Thinking skills
Design, expression, research and development, material selection, independent thought

Science
Heating plastics and effects, plastic/polymer material knowledge, nutrition

Project Outline:

Students are to make a unique chocolate bar mould of their own design, which reflects the theme of any given up-coming holiday, an event, or brand. The design might be similar to traditional chocolate bars, or explore new shapes and forms. The design should have 3D elements with either lettering, a logo, or picture to reflect the chosen theme. Students must not only design their own mould with which to complete the vacuum forming process, but also choose a suitable mould material, and an appropriate and food safe plastic material. Once completed, students are to melt and pour chocolate into their moulds to produce their final product. This is a great project for any class in the workshop, whilst also relating well to any Food Technology class.

Method:

Students begin by quickly sketching several rough design ideas based upon prior knowledge and/or research of chocolate bars available on the market. Upon choosing one of these ideas, students can then take this to the final design stage to develop and refine details. Students must produce their final plan on paper at a scale of 1:1, reflecting accurately the size, dimensions and decoration of their design. All designs must consider key aspects of successful mould design, such as draft angles, undercuts, and venting.

Moving on to the mould making element of the project, students can select a suitable mould material based up design shape and tools available to them, or use a material specified by their teacher. Possible mould materials may include wood, MDF, foam, or clay.

If students are allowed to independently select their own mould material, then there is opportunity here for them to justify their choices, further demonstrating their knowledge of the vacuum forming process. Teachers may need to guide students to make informed choices, engaging them in conversations as to why certain materials may perform better or worse, based upon their designs.

The material can be shaped using appropriate tools and/or machinery to the exact specifications of the design. Additional 3D detail may be added by means of further tooling, or the application of additional materials, such as string, or other craft materials glued in place.

Once a suitable final mould has been produced, students can vacuum form their designs using 1.5mm PVC material, or any other food safe plastic. Multiple moulds per vacuum form is advised to reduce the amount of plastic material used.

Homework Tasks:

To save time in the classroom, students can draw their final 1:1 scale chocolate mould design independently at home, ready for the mould making process in class.

And/or, have students identify one more use for vacuum forming within the food industry. Online research and observations in the home can be used to demonstrate understanding and inform design choices in the classroom.

Optional Extras:

Once the chocolate bar has been produced, students may continue their learning exploring elements of both food packaging and food nutritional information. Students might design and make a chocolate bar wrapper using aluminium foil, paper, or a combination of both. On the exterior of the wrapper the chosen holiday theme can be further represented, and relevant food nutritional information displayed. This can be obtained from the original packaging of the chocolate used for melting. Students may conduct market research and questionnaires to see what the public find appealing and desirable in chocolate bar packaging. Finished products can be either designed and printed on computer, or be produced by hand using traditional art skills and materials.

Method: (Continued)

For this project there is no trimming necessary, as the formed sheet creates the final chocolate mould. The newly formed product can be washed using regular dish soap, and dried ready for the chocolate bar production stage.

Students may now melt chocolate of their choosing, pour into their vacuum formed chocolate mould, allow to cool completely, and push their final chocolate bar out onto a flat clean surface.

Student Accomplishments:

- The creation of their own chocolate bar
- Understanding of confectionary design
- Market research
- Informed and successful material selection and justification
- Utilising a variety of tools and techniques to shape chosen materials
- Practical hands on experience using a vacuum forming machine, and understanding its wider application
- Opportunity to conduct research and development
- Learning around food safe plastics

Teachers notes:

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