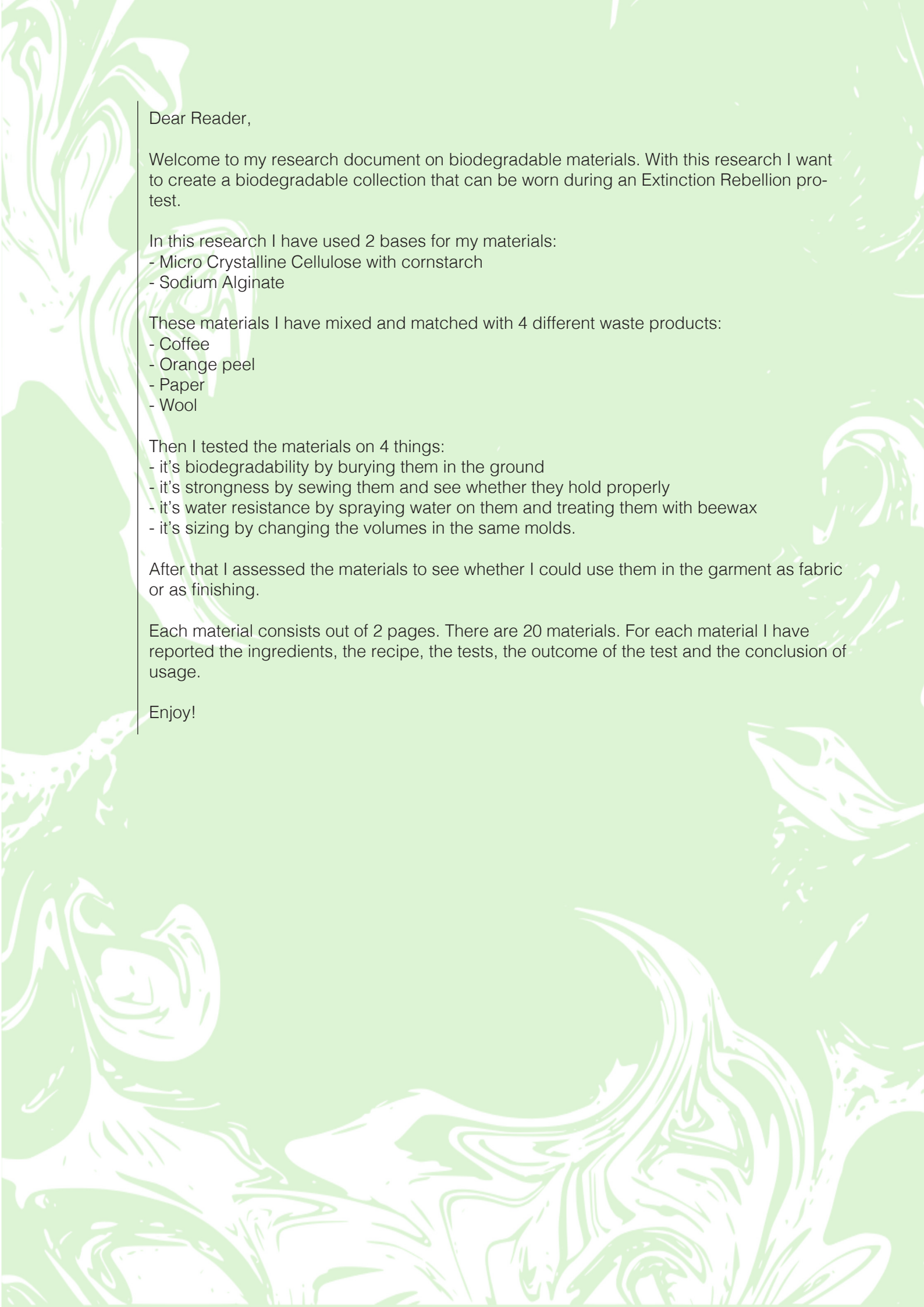




Research Biodegradable Materials

Material Research Book Textiles
University of Applied Sciences Amsterdam
Amsterdam Fashion Institute
Course: Internship + Graduation
Student: Laura Weller
Studentnumber: 500844365
Study Year: 2023 - 2024

| Number | Base + Additional Material | Image | Water resistant? | Compost bin? | Strong? | Sizing? | Finishing or Fabric? |
|--------|---|---|------------------|--------------|---------|-----------------------------|----------------------|
| 1 | CMC + MCC Coffee |  | No | | No | No | - |
| 2 | CMC + MCC Orange peel |  | No | | No | No | - |
| 3 | CMC + MCC Wool |  | No | | No | No | - |
| 4 | CMC + MCC Paper |  | No | | No | 2250 ml per 1m ² | Finishing |
| 5 | CMC + MCC Coffee + Orange peel |  | No | | No | No | - |
| 6 | CMC + MCC Coffee + Wool |  | No | | No | No | - |
| 7 | CMC + MCC Coffee + Paper |  | No | | No | No | Finishing |
| 8 | CMC + MCC Orange peel + wool |  | No | | No | No | - |
| 9 | CMC + MCC Orange peel + paper |  | No | | No | No | - |
| 10 | CMC + MCC Paper + Wool |  | No | | No | No | - |
| 11 | Sodium Alginate Coffee |  | Yes | | No | 2250 ml per 1m ² | Finishing |
| 12 | Sodium Alginate Orange peel |  | Yes | | No | No | - |
| 13 | Sodium Alginate Paper |  | Yes | | Yes | 2250 ml per 1m ² | Fabric |
| 14 | Sodium Alginate Wool |  | Yes | | Yes | 5625 ml per 1m ² | Fabric |
| 15 | Sodium Alginate Coffee + Orange peel |  | Yes | | No | No | - |
| 16 | Sodium Alginate Coffee + Paper |  | Yes | | Yes | 2250 ml per 1m ² | Fabric |
| 17 | Sodium Alginate Coffee + Wool |  | Yes | | Yes | 5625 ml per 1m ² | Fabric |
| 18 | Sodium Alginate Orange peel + paper |  | Yes | | Yes | No | - |
| 19 | Sodium Alginate Orange peel + wool |  | Yes | | Yes | 5625 ml per 1m ² | Fabric |
| 20 | Sodium Alginate Wool + Paper |  | Yes | | Yes | 2250 ml per 1m ² | Fabric |



Dear Reader,

Welcome to my research document on biodegradable materials. With this research I want to create a biodegradable collection that can be worn during an Extinction Rebellion protest.

In this research I have used 2 bases for my materials:

- Micro Crystalline Cellulose with cornstarch
- Sodium Alginate

These materials I have mixed and matched with 4 different waste products:

- Coffee
- Orange peel
- Paper
- Wool


Then I tested the materials on 4 things:

- it's biodegradability by burying them in the ground
- it's strongness by sewing them and see whether they hold properly
- it's water resistance by spraying water on them and treating them with beewax
- it's sizing by changing the volumes in the same molds.

After that I assessed the materials to see whether I could use them in the garment as fabric or as finishing.

Each material consists out of 2 pages. There are 20 materials. For each material I have reported the ingredients, the recipe, the tests, the outcome of the test and the conclusion of usage.

Enjoy!

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 1 | CMC + MCC Coffee |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Sterilize the coffee
3. Mix water, CMC, glycerine and vinegar
4. Add coffee, MCC and cornstarch
5. Whisk till liquid thin mess
6. Put on stove and whisk till liquid mess becomes thick paste
7. Take paste off stove and pour into mold
8. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 5 gr coffee


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 1 | CMC + MCC Coffee |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore i cannot make garments nor finishings created from patterns out of this. Therefore I have not conducten any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 2 | CMC + MCC Orange Peel |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover
3. Mix water, CMC, glycerine and vinegar
4. Add orange peel powder, MCC and cornstarch
5. Whisk till liquid thin mess
6. Put on stove and whisk till liquid mess becomes thick paste
7. Take paste off stove and pour into mold
8. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 2.4 gr orange peel

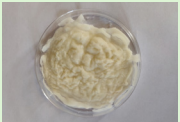
Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 2 | CMC + MCC Orange Peel |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore I cannot make garments nor finishings created from patterns out of this. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|--------|
| 3 | CMC + MCC Wool |  | No | No | No | No |

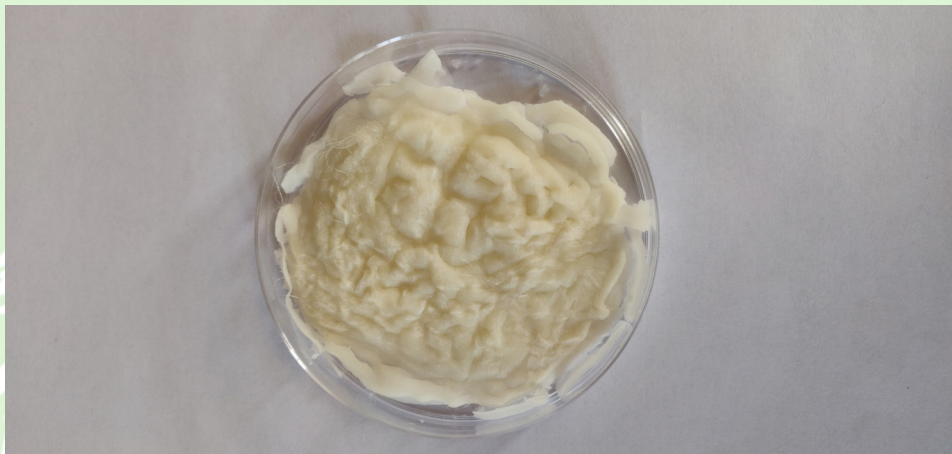
How to make


1. Make CMC solution and let stay overnight
2. Wash and card the raw wool
3. Mix water, CMC, glycerine and vinegar
4. Add the MCC and cornstarch
5. Whisk till liquid thin mess
6. Put on stove and whisk till liquid mess becomes thick paste
7. Take paste off stove and let it cool off
8. When cooled down add the wool and stirr
9. Pour in mold
10. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 0,4 gr carded wool


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|--------|
| 3 | CMC + MCC Wool |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore I cannot make garments nor finishings created from patterns out of this. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 4 | CMC + MCC Paper |  | No | | No | 2250 ml per 1m ² |

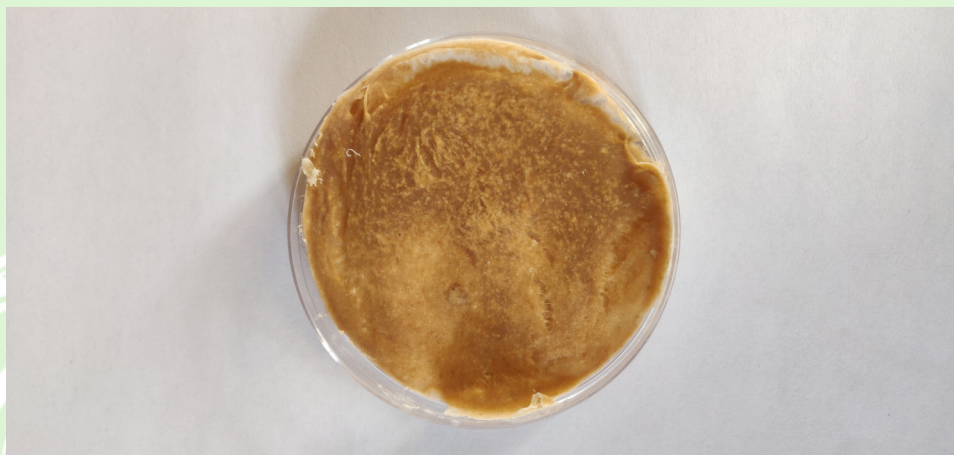
How to make


1. Make CMC solution and let stay overnight
2. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
3. Mix paperpulp with the rest of the water, CMC, glycerine and vinegar
4. Add the MCC and cornstarch
5. Whisk till liquid thin mess
6. Put on stove and whisk till liquid mess becomes thick paste
7. Pour in mold
8. Let dry for 8 days

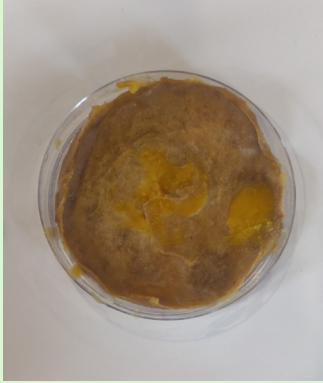
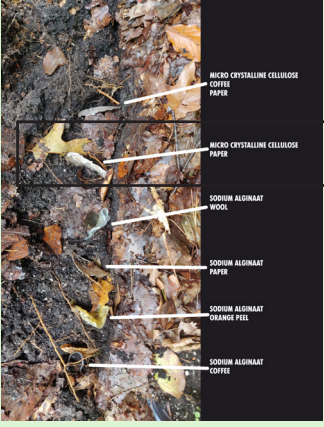
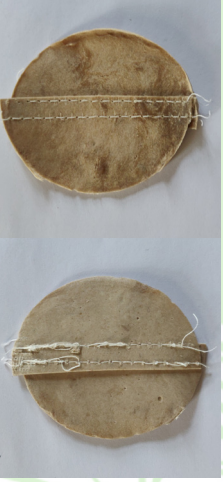
Recipe


- 50 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 5 gr paper grinded in 50 ml water

Image material




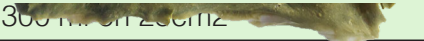

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 4 | CMC + MCC Paper |  | No | | No | 2250 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|---|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax does not make the fabric better. Furthermore, adding beewax on the material is very hard since the beewax is hot and the material melts when you put it in a hot pan. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I checken every 4 weeks how far the process of decomposing was. |  | I have burried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strong-ness test I sewed the material and tested whether it would break or not |  | I tried to sew the material, but you can clearly see that it is not made for sewing. The material is not strong and it breaks easily when pulling on it. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 4 | CMC + MCC Paper |  | No | | No | 2250 ml per 1m ² |

How much on 1m2


Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| | | | | | |
|-----------------------------|---|-----------------------------|--|------------------------------|---|
| 200 ml on 28cm ² |  | 300 ml on 28cm ² |  | 2250 ml on 28cm ² |  |
| | | | | | |

Conclusion: This material becomes very thick and unbendable when you have a lot of liquid volume in a mold. Furthermore it takes ages to dry. The best material out of the three is 2250 ml per 1m² OR 200 ml on 28 cm².


Final Conclusion

The material is not easy to sew and not very strong. It is not working well with beewax and it is not water resistant. The material is difficult to dry. However the material does show a nice texture. I think this material can work better as a finishing then as a fabric. Therefore I will start do 3D printing tests with it.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 4 | CMC + MCC Paper |  | No | | No | 2250 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | For color effects I added natural dye pigments onto the material to see the effect |

| Color | Pigment | Paste | Waste water |
|----------------|---------|-------|-------------|
| Red | | | |
| Madder | | | |
| Hibiscus | | | |
| Purple | | | |
| Cabbage | | | |
| Blueberry | | | |
| Yellow | | | |
| Orange | | | |
| Peels | | | |
| Tumeric | | | |
| Carrot | | | |
| Leaves | | | |
| Orange | | | |
| Carrots | | | |
| Paprika powder | | | |
| Blue | | | |
| Butterfly tea | | | |
| Welt | | | |
| Green | | | |
| Paper of eggs | | | |
| Spirulina | | | |
| Matcha powder | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|-----------------------------------|---|------------------|--------------|---------|--------|
| 5 | CMC + MCC Coffee + orange peel |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover.
3. Sterilize the coffee
4. Mix water, CMC, glycerine and vinegar
5. Add orange peel powder, coffee, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and pour into mold
9. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 2.4 gr orange peel
- 5 gr coffee


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------------|---|------------------|--------------|---------|---------|
| 5 | CMC + MCC Coffee + orange peel |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore I cannot make garments nor finishings created from patterns out of this. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 6 | CMC + MCC Coffee + Wool |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Wash and card the raw wool
3. Sterilize the coffee
4. Mix water, CMC, glycerine and vinegar
5. Add coffee, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and let it cool off
9. When cooled down add the wool and stirr
10. Pour in mold
11. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 0,4 gr wool
- 5 gr coffee


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 6 | CMC + MCC Coffee + Wool |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore i cannot make garments nor finishings created from patterns out of this. Therefore I have not conducten any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------|---|------------------|--------------|---------|---------|
| 7 | CMC + MCC Coffee + paper |  | No | | No | |

How to make


1. Make CMC solution and let stay overnight
2. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
3. Sterilize the coffee
4. Mix paperpulp with the rest of the water, CMC, glycerine and vinegar
5. Add coffee, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and pour into mold
9. Let dry for 8 days

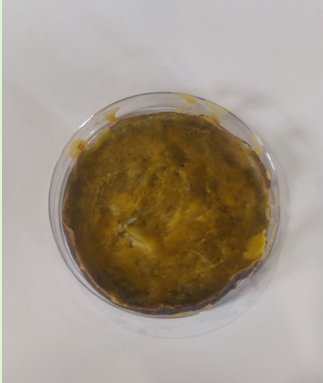
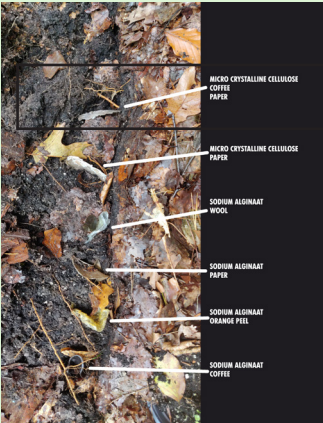

Recipe


- 50 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 5 gr paper grinded in 50 ml water
- 5 gr coffee

Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------|---|------------------|--------------|---------|---------|
| 7 | CMC + MCC Coffee + paper |  | No | | No | |

| Tests | | | | | | |
|----------------------|--|---|---|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax does not make the fabric better. Furthermore, adding beewax on the material is very hard since the beewax is hot and the material melts when you put it in a hot pan. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I checken every 4 weeks how far the process of decomposing was. |  | I have burried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | The material was quite tough but the sewing machine could sew through. However, the material is not very strong after sewing. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------|---|------------------|--------------|---------|---------|
| 7 | CMC + MCC Coffee + paper |  | No | | No | |

How much on 1m2


Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

Conclusion:

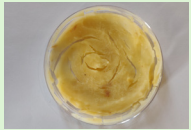
I decided not to test this material since the previous test with just paper turned out badly. I assume that the material in this test will turn out very similar and might even also crack open due to the coffee. I think this material is better suited for small samples (such as finishings) in stead of big pieces of fabric.

Final Conclusion

The material is not easy to sew and not very strong. It is not working well with beewax and it is not water resistant. The material is difficult to dry. However the material does show a nice texture. I think this material can work better as a finishing then as a fabric. Therefore I will start do 3D printing tests with it.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------|---|------------------|--------------|---------|---------|
| 7 | CMC + MCC Coffee + paper |  | No | | No | |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the coffee colors the material enough |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|---------|
| 8 | CMC + MCC Orange peel + wool |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover.
3. Wash and card the raw wool
4. Mix water, CMC, glycerine and vinegar
5. Add orange peel powder, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and let it cool off
9. When cooled down add the wool and stirr
10. Pour in mold
11. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 2.4 gr orange peel
- 0,4 gr carded wool


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|---------|
| 8 | CMC + MCC Orange peel + wool |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore i cannot make garments nor finishings created from patterns out of this. Therefore I have not conducten any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|---------|
| 9 | CMC + MCC Orange peel + paper |  | No | No | No | No |

How to make


1. Make CMC solution and let stay overnight
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover.
3. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
4. Mix paperpulp with the rest of the water, CMC, glycerine and vinegar
5. Add orange peel powder, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and pour into mold
9. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 2.4 gr orange peel
- 5 gr paper grinded in 50 ml water


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|---------|
| 9 | CMC + MCC Orange peel + paper |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore i cannot make garments nor finishings created from patterns out of this. Therefore I have not conducten any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|----------------------------|---|------------------|--------------|---------|--------|
| 10 | CMC + MCC Paper + Wool |  | No | No | No | No |

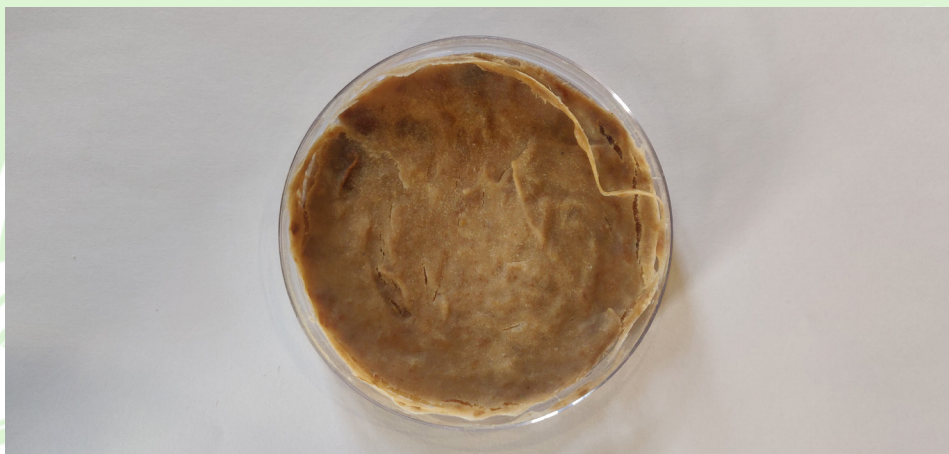
How to make


1. Make CMC solution and let stay overnight
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover.
3. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
4. Mix paperpulp with the rest of the water, CMC, glycerine and vinegar
5. Add orange peel powder, MCC and cornstarch
6. Whisk till liquid thin mess
7. Put on stove and whisk till liquid mess becomes thick paste
8. Take paste off stove and let it cool off
9. When cooled down add the wool and stirr
10. Pour in mold
11. Let dry for 8 days

Recipe

- 100 ml water
- 13 gr MCC
- 30 ml CMC (3% solution on water)
- 35 ml glycerine
- 20 gr cornstarch
- 5 ml vinegar
- 2.4 gr orange peel
- 0,4 gr carded wool

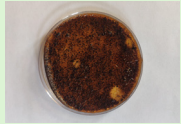
Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|---------|
| 10 | CMC + MCC Paper + Wool |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it cannot dry properly as one material. The material cracks open, therefore I cannot make garments nor finishings created from patterns out of this. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 11 | Sodium Alginate Coffee |  | Yes | | No | 2250 ml per 1m ² |

How to make

1. Sterilize the coffee
2. Mix water, glycerine and sunflower oil
3. While whisking, add the sodium alginate
4. Cover up and let rest in fridge overnight
5. When rested, stir one more time
5. While stirring, add the coffee
6. Pour in mold
7. Let dry for 8 days

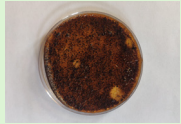
Recipe


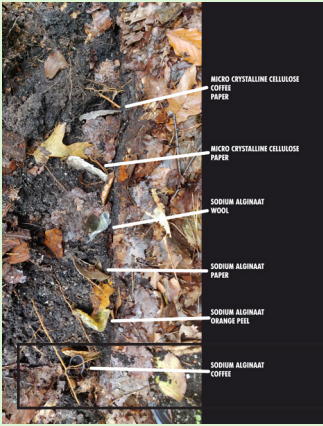

- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr coffee


Image material

Side note: mold comes quick and a careful eye to threat it with alcohol is needed.



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 11 | Sodium Alginate Coffee |  | Yes | | No | 2250 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|---|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is successful. The material holds well. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | The material is easy to sew and holds well when swen. Still I don't think it is super strong, but it can manage as t-shirt for example. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 11 | Sodium Alginate Coffee |  | Yes | | No | 2250 ml per 1m ² |

How much on 1m2

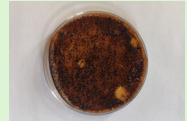
Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|---|--|
|  |  |  |

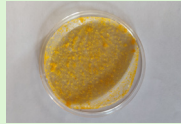
Conclusion: The material has a beautiful look, but is very fragile and you have zero control over the shrinkage. This material I cannot use in the garments, but might be a nice finishing. Furthermore I can create a digital fabric out of this material.

Final Conclusion

The material is not easy to sew and not very strong. It is working well with beewax and it is water resistant. The material is easy to dry when small, in big molds it will start to mould due to the coffee. However the material does show a nice texture. I think this material can work better as a finishing then as a fabric. Therefore I will start do 3D printing tests with it.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 11 | Sodium Alginate Coffee |  | Yes | | No | 2250 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the coffee colors the material enough |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|--------------------------------|---|------------------|--------------|---------|---------|
| 12 | Sodium Alginate Orange Peel |  | Yes | | No | No |

How to make

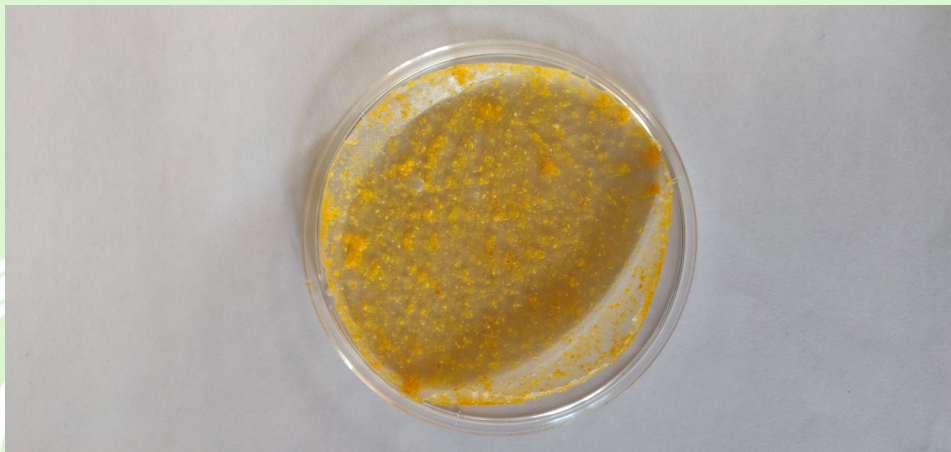
1. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover
2. Mix water, glycerine and sunflower oil
3. While whisking, add the sodium alginate
4. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the orange peel
8. Pour in mold
9. Let dry for 8 days


Recipe

- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 2.4 gr orange peel

Image material


Side note: mold comes quick and a careful eye to threat it with alcohol is needed.



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|--------------------------------|---|------------------|--------------|---------|---------|
| 12 | Sodium Alginate Orange Peel |  | Yes | | No | No |

Conclusion

I have decided not to use this material due to that it is very mouldy, very fragile and very sticky. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 13 | Sodium Alginate Wool |  | Yes | | Yes | 5625 ml per 1m ² |

How to make


1. Wash and card the wool
2. Mix water, glycerine and sunflower oil
3. While whisking, add the sodium alginate
4. Cover up and let rest in fridge overnight
5. When rested, stir one more time
6. While stirring, add the wool
7. Pour in mold
8. Let dry for 8 days

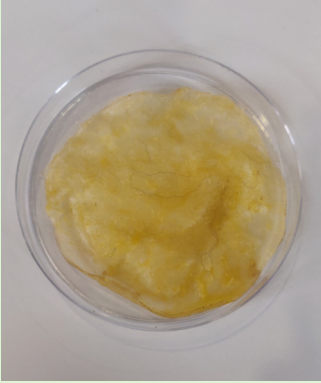
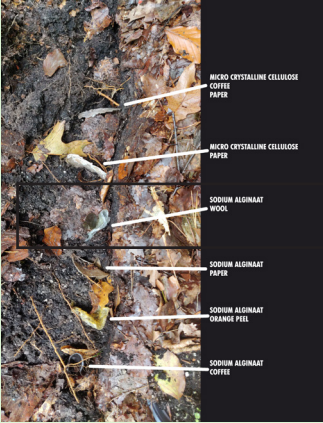
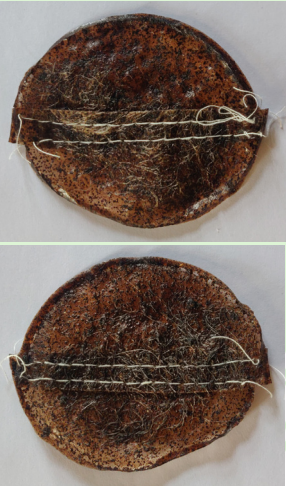
Recipe


- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr coffee

Image material






| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 13 | Sodium Alginate Wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|---|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is successful. The material holds well. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | I was unable to sew this material since it was too sticky. However, when adding pigments the stickiness of the material disappears and you can sew the material, therefore I added the image of the coffee sewed sample here. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 13 | Sodium Alginate Wool |  | Yes | | Yes | 5625 ml per 1m ² |

How much on 1m2


Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|---|--|
|  |  |  |






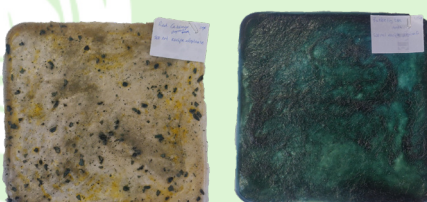

Conclusion: The material is very fragile when you pour in little in the mold The more liquid you pour the more solid it becomes. The material on the right is very strong and gives a good leather ish look. (in this material I have added madder to make it non sticky and already do some coloration experiments).

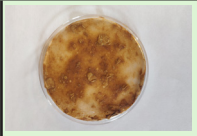
Final Conclusion

The material is not to sew and very strong. It is working well with beewax and it is water resistant. The material is easy to dry. I think this material can work best as fabric.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 13 | Sodium Alginate Wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | For color effects I added natural dye pigments onto the material to see the effect |

| Color | Pigment | Waste water |
|----------------|---|---|
| Red |  |  |
| Madder | | |
| Hibiscus | | |
| Purple | |  |
| Cabbage | | |
| Blueberry | | |
| Yellow |  |  |
| Orange | | |
| Peels | | |
| Tumeric | | |
| Carrot | | |
| Leaves | | |
| Orange |  | |
| Annatto | | |
| Paprika powder | | |
| Blue | | |
| Butterfly tea |  | |
| Welt | | |
| Cabbage | | |
| Green | | |
| Egg bin paper |  |  |
| Spirulina | | |
| Matcha powder | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 14 | Sodium Alginate Paper |  | Yes | | Yes | 2250 ml per 1m ² |

How to make

1. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
2. Mix paperpulp with the rest of the water, glycerine and sunflower oil
3. While whisking, add the sodium alginate
4. Cover up and let rest in fridge overnight
5. When rested, stir one more time
6. Pour in mold
7. Let dry for 8 days

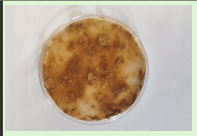
Recipe

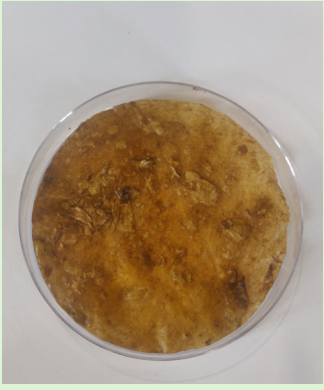
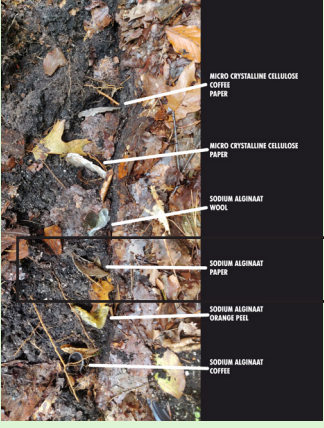

- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr paper grinded in 50 ml water

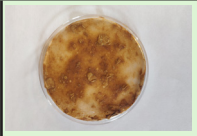
Image material



* Note: the longer you grind the paper, the smoother the material. You can have some power onto how that in the end translates as fabric.




| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 14 | Sodium Alginate Paper |  | Yes | | Yes | 2250 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|--|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is very successful. The material holds well and it keeps the shape. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strength test I sewed the material and tested whether it would break or not |  | The sample that I sew is very thin, but still works very well. The sewing machine is also liking the material very much. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|-----------------------------|
| 14 | Sodium Alginate Paper |  | Yes | | Yes | 2250 ml per 1m ² |

How much on 1m2

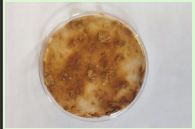
Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

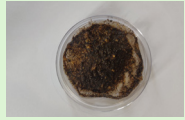
| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|---|--|
|  |  |  |

Conclusion: The material is very good when you pour in little in the mold. The more liquid you pour the more stiff it becomes. The material on the right is very stiff and is difficult to bend. All of them give off a ground-ish earthy look.

Final Conclusion

The material is easy to sew and strong. It is working well with beewax and it is water resistant. The material is easy to dry. I think this material can work best as fabric.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------|---|------------------|--------------|---------|--------------------------------|
| 14 | Sodium Alginate Paper |  | Yes | | Yes | 2250 ml per 1m ² |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---|---|------------------|--------------|---------|---------|
| 15 | Sodium Alginate Coffee + orange peel |  | No | No | No | No |

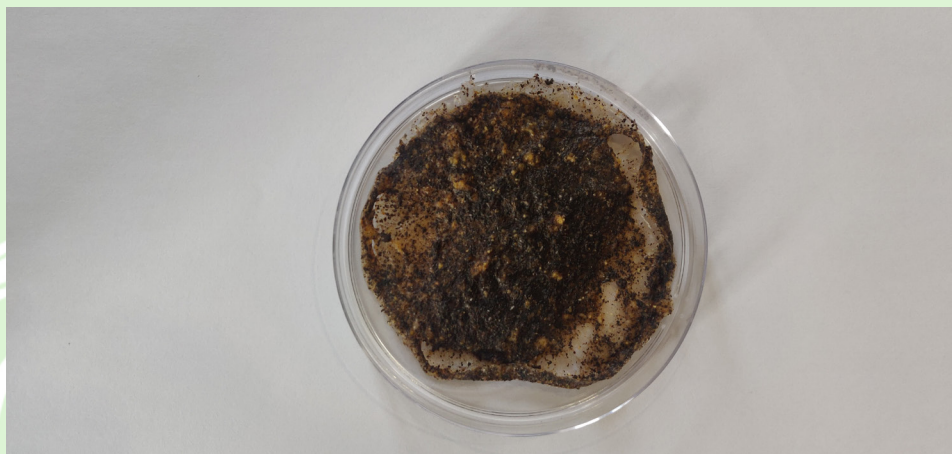
How to make

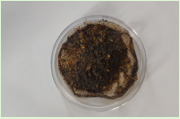
1. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover
2. Sterilize the coffee
3. Mix water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the coffee, then the orange peel
8. Pour in mold
9. Let dry for 8 days

Recipe

- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr coffee
- 2,4 gr orange peel


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---|---|------------------|--------------|---------|---------|
| 15 | Sodium Alginate Coffee + orange peel |  | No | No | No | No |

Conclusion

I have decided not to use this material due to that it is very, very mouldy. It also shrinks super fast and gives of quite an ugly look. Therefore I have not conducted any tests and stopped producing the material after the first outcome.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 16 | Sodium Alginate Coffee + Wool |  | Yes | | Yes | 5625 ml per 1m ² |

How to make


1. Wash and card the wool
2. Sterilize the coffee
3. Mix water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the coffee, then the wool
8. Pour in mold
9. Let dry for 8 days

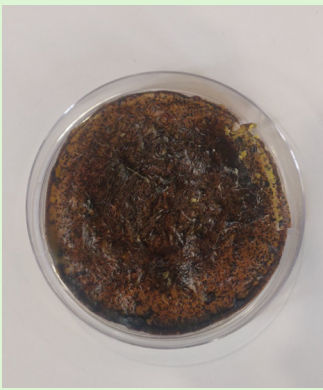
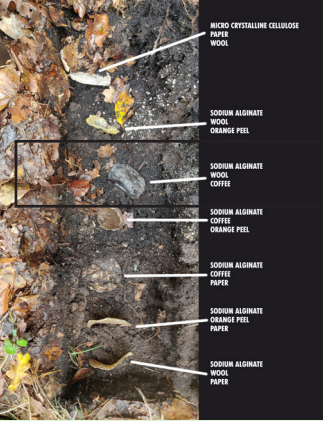
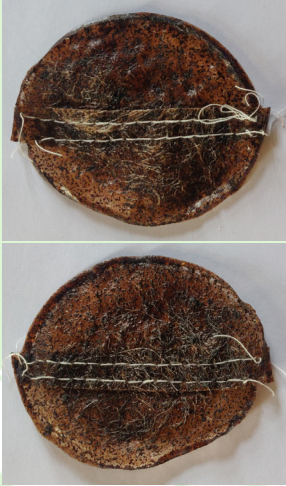
Recipe


- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr coffee
- 0,4 gr carded wool

Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 16 | Sodium Alginate Coffee + Wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|--|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Material works with beewax, however, it does not get a much nicer look (looks a bit dirty - like there are worms inside the material..). | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I checken every 4 weeks how far the process of decomposing was. |  | I have burried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | The material holds the thread very well due to the wool fibres. The sewing machine also had no problems with sewing the material. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 16 | Sodium Alginate Coffee + Wool |  | Yes | | Yes | 5625 ml per 1m ² |

How much on 1m2

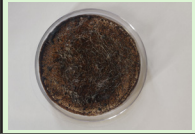
Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|---|--|
|  |  |  |


Conclusion: The material is very fragile when you pour in little in the mold The more liquid you pour the more solid it becomes. The material on the right is very strong and gives a good leather ish look.

Final Conclusion

The material is easy to sew and strong. It is working well with beewax and it is water resistant. The material is easy to dry. I think this material can work best as fabric.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 16 | Sodium Alginate Coffee + Wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the coffee colors the material enough |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 17 | Sodium Alginate Coffee + paper |  | Yes | | Yes | 2250 ml per 1m ² |

How to make

1. Sterilize the coffee
2. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
3. Mix paperpulp with the rest of the water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the coffee
8. Pour in mold
9. Let dry for 8 days

Recipe


- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr coffee
- 5 gr paper


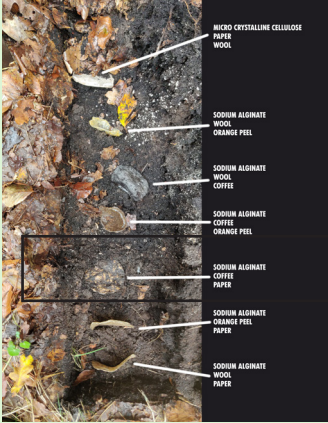
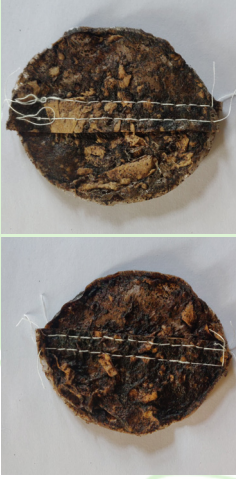
Image material




* Note: If you add more water in the end, it is easier to spread the material in the mold and it has no effect on the outcome

** Note 2: When grinding the pulp of the paper, you can choose how long to grind it. The sample here is cardboard from boxes, shredded by hand and grinded in a mixer with the other ingredients. The sample for the sizing test (see 2 pages from now) is shredded paper from egg boxes with the mixer beforehand as dry pulp and afterwards with the other ingredients as well. The outcome of the material is very different. Hence, with this material you have much control over the outcome when preparing the way fo mixing up the ingredients.




| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|-----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 17 | Sodium Alginate Coffee + paper |  | Yes | | Yes | 2250 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|--|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is successful. The material holds well. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | The material holds well and the sewing machine has no trouble sewing through. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|-----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 17 | Sodium Alginate Coffee + paper |  | Yes | | Yes | 2250 ml per 1m ² |

How much on 1m2


Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|---|--|
|  |  |  |


Conclusion: 200 ml in the mold is the best option: the material can still be sewn, it is strong, but still flexible. 500 ml is too stiff and shrinks a lot.

Final Conclusion

The material can be sewn and has a beautiful dark texture. Furthermore it can be treated with beeswax, but is also quite water resistant in itself. The less liquid you pour in the mold the thinner and better it becomes for a t-shirt. Therefore 2250 ml per 1m² is recommended. The thicker the material becomes, the more it shrinks in length but also the more it becomes too solid to work with.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|-----------------------------------|---|------------------|--------------|---------|-----------------------------|
| 17 | Sodium Alginate Coffee + paper |  | Yes | | Yes | 2250 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the coffee colors the material enough |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------------|---|------------------|--------------|---------|-----------------------------|
| 18 | Sodium Alginate Orange peel + wool |  | Yes | | Yes | 5625 ml per 1m ² |

How to make

1. Wash and card the wool
2. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover
3. Mix water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the orange peel, then the wool
8. Pour in mold
9. Let dry for 8 days

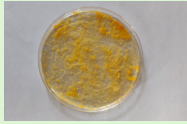
Recipe

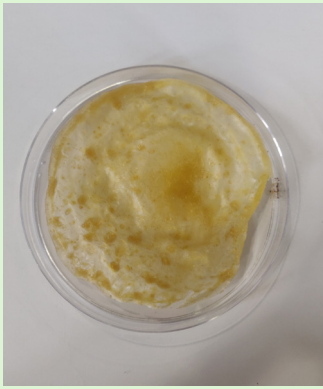
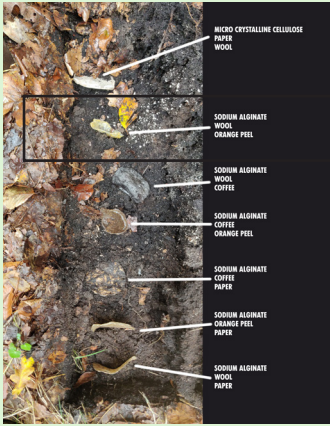
- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 2,4 gr orange peel
- 0,4 gr carded wool

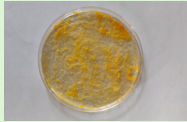
Image material



* Side note: mold comes quick and a careful eye to threat it with alcohol is needed.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------------|---|------------------|--------------|---------|-----------------------------|
| 18 | Sodium Alginate Orange peel + wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|--|--|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is successful. The material holds well. | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not | - | I was not able to sew this material since it was too sticky. | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------------|---|------------------|--------------|---------|-----------------------------|
| 18 | Sodium Alginate Orange peel + wool |  | Yes | | Yes | 5625 ml per 1m ² |

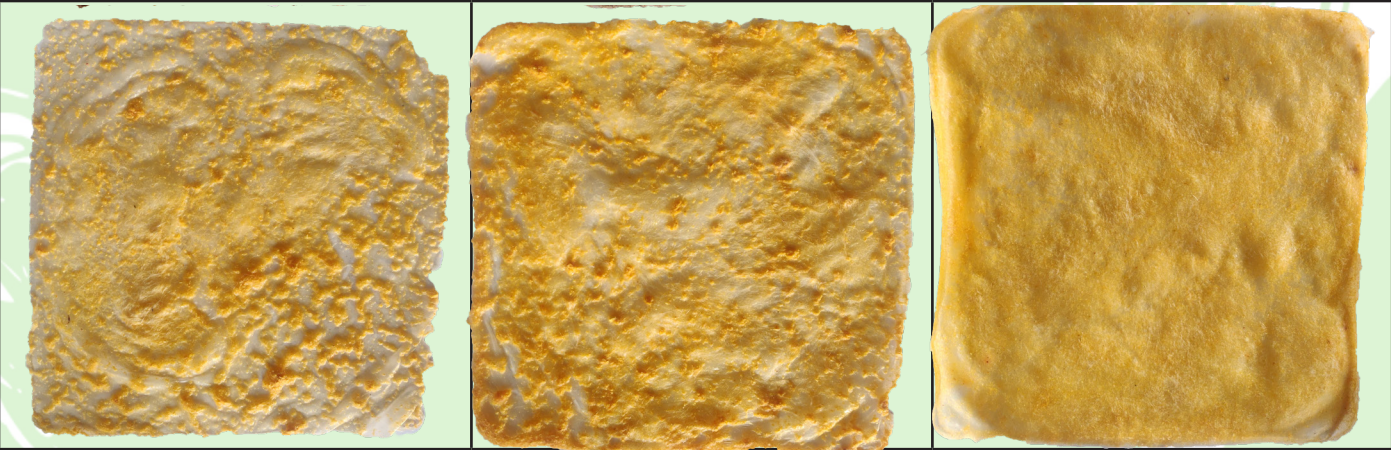
How much on 1m2

Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

200 ml on 28cm2

300 ml on 28cm2

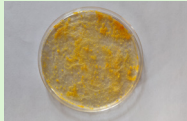
500 ml on 28cm2



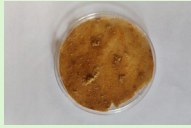
Conclusion: The material is very fragile when you pour in little in the mold. The more liquid you pour, the more solid it becomes. The material on the right is very strong and gives a good leather-ish look.

Final Conclusion

The material is easy to sew and strong. It is working well with beeswax and it is water resistant. The material is easy to dry. I think this material can work best as fabric.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------------|---|------------------|--------------|---------|-----------------------------|
| 18 | Sodium Alginate Orange peel + wool |  | Yes | | Yes | 5625 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the orange peels colors the material enough |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|--|---|------------------|--------------|---------|--------|
| 19 | Sodium Alginate Orange peel + paper |  | Yes | | Yes | No |

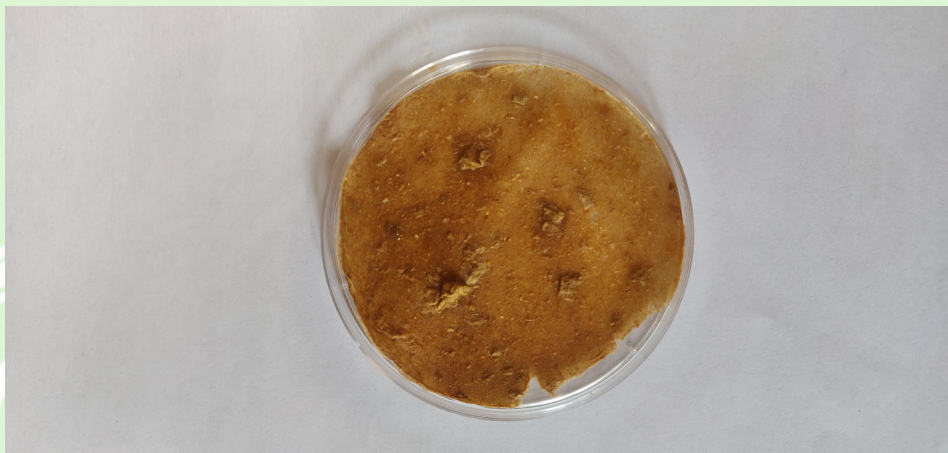
How to make


1. Dry the orange peel in an oven over night on 70 degrees. Then grind the peels and sift the grinded peels to take the big bulks out. Use the almost powder like leftover
2. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
3. Mix paperpulp with the rest of the water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the orange peel
8. Pour in mold
9. Let dry for 8 days

Recipe

- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 2,4 gr orange peel
- 5 gr paper


Image material



| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing |
|--------|--|---|------------------|--------------|---------|--------|
| 19 | Sodium Alginate Orange peel + paper |  | Yes | | Yes | No |

Conclusion

I have decided not to use this material due to that the properties are very similar to the material with just paper. The usage of orange peel in it feel then quite unnecessary.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|-----------------------------|
| 20 | Sodium Alginate Paper + Wool |  | Yes | | Yes | 2250 ml per 1m ² |

How to make

1. Wash and card the wool
2. Grind thin scraps of paper with water (10% paper on water). Let it rest in a closed box for 24 hours. Then grind again.
3. Mix paperpulp with the rest of the water, glycerine and sunflower oil
4. While whisking, add the sodium alginate
5. Cover up and let rest in fridge overnight
6. When rested, stir one more time
7. While stirring, add the wool
8. Pour in mold
9. Let dry for 8 days

Recipe


- 100 ml water
- 5 gr glycerine
- 2,5 gr sunflower oil
- 3 gr sodium alginate
- 5 gr paper
- 0,4 gr carded wool

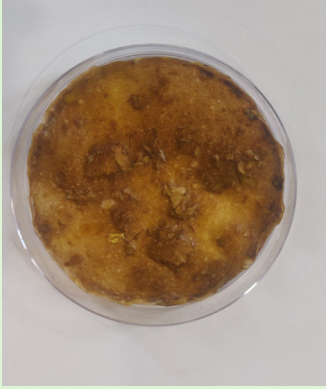


Image material

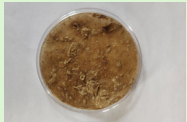


* Note: If you add more water in the end, it is easier to spread the material in the mold and it has no effect on the outcome

** Note 2: When grinding the pulp of the paper, you can choose how long to grind it. The sample here is cardboard from boxes, shreaded by hand and grinded in a mixer with the other ingredients. The sample for the sizing test (see 2 pages from now) is shreaded paper from egg boxes with the mixer beforehand as dry pulp and afterwards with the other ingredients as well. The outcome of the material is very different. Hence, with this material you have much control over the outcome when preparing the way fo mixing up the ingredients.




| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|-----------------------------|
| 20 | Sodium Alginate Paper + Wool |  | Yes | | Yes | 2250 ml per 1m ² |

| Tests | | | | | | |
|----------------------|--|---|---|--|--|--|
| Name | What is the test? | Image | Conclusion | | | |
| Water resistant test | For the water resistant test I added melted beewax onto the material to see what would happen. After that I tried to pour water over it. |  | Adding beewax is very successful. The material holds well and it keeps the supply movements | | | |
| Compost bin test | For the compost bin test I let the material decompose in a compost bin and I check every 4 weeks how far the process of decomposing was. |  | I have buried a sample on the 28th of Oct. Results will come in around the end of April. | | | |
| Strong? | For the strongness test I sewed the material and tested whether it would break or not |  | The material holds well and the sewing machine likes to sew through | | | |

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|-----------------------------|
| 20 | Sodium Alginate Paper + Wool |  | Yes | | Yes | 2250 ml per 1m ² |

How much on 1m2

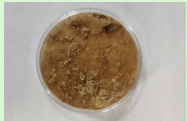
Here I tested how much of the material should be in the mold. Depending on how thick you want the material, you can change the amount of material you pour into the mold.

| 200 ml on 28cm2 | 300 ml on 28cm2 | 500 ml on 28cm2 |
|--|--|--|
|  |  |  |

Conclusion: Conclusion: 200 ml in the mold is the best option: the material can still be sewn, it is strong, but still flexible. 500 ml is too stiff and shrinks a lot.

Final Conclusion

The material can be sewn and has a beautiful dark texture. Furthermore is can be treated with bee-wax, but is also quite water resistant in itself. The less liquid you pour in the mold the thinner and better it becomes for a t-shirt. Therefore 2250 ml per 1m² is recommended. The thicker the material becomes, the more is shrinks in length but also the more is becomes too solid to work with.

| Number | Base + additional material | Image | Water resistant? | Compost bin? | Strong? | Sizing? |
|--------|---------------------------------|---|------------------|--------------|---------|-----------------------------|
| 20 | Sodium Alginate Paper + Wool |  | Yes | | Yes | 2250 ml per 1m ² |

| Tests | |
|---------------|--|
| Name | What is the test? |
| Color effects | I did not do a color test with this material since the test is already done on sodium alginate + paper and sodium alginate + wool. The combination of the 2 seemed a bit not necessary |

Final conclusion

For the fabrics I will use material number 13, 14 , 16 ,17, 18 and 20

For the finishings I will use material number 4, 7 and 11

