

October 7, 2021

Regarding:	Report of Findings:	Broadway Relief Project Item SQ3385728
	Abbott Project No:	21-231
	Company Name:	Broadway Relief Project
	Item:	The Singer's Mask: Child Look Light Beige
	Website:	https://www.broadwayreliefproject.com/
	Location:	1601 Broadway 11 th Floor NY, NY 10019
	Client:	Sven Gustafson

Dear Sven Gustafson

This letter is a report for the above mentioned mask. The purpose of the evaluation was to determine the dead air space of the mask and evaluate the safety for use on children. Photographs were taken and are included at the end of this report.

Conclusions

1. I do not recommend that this mask be used on children. DO NOT USE ON CHILDREN
2. The dead air space was measured to be approximately 12 ounces. This dead space volume would far exceed normal tidal volumes of children.
3. There was no indication that the product had been tested on children.
4. There was no indication to conclude that the product was manufactured to any standard.
5. The product clearly would have significant "interference with a child's breathing."
6. There is a real danger in this being considered child abuse if a child were to be forced to wear it against their will or the will of the parent.
7. Considering the mask was made of cotton and would collect moisture and all sorts of particles from normal use, I would be very concerned about sharing the mask with others and reuse. It has been shown that the inside surface of typical masks worn by school children can have all sorts of pathogen from a single use.
8. There was no listed time of use on the packaging.
9. Basically, a child would be breathing in a very significant amount of exhaled air on every breath. The deficiency of oxygen and the buildup of carbon dioxide within the mask could become dangerous and could easily worsen as the child continues to breathe through the mask.
10. This study made no conclusions with the ability of the mask to stop or hinder virus transmission. However, it should be pointed out that the thread count looked to be rather large and there was a significant amount air escaping from the edge of the mask on both inhale and exhale.

Analysis

The following information was gathered:

1. The mask was received in the mail on 9/29/2021 coming from Mr. Gustafson.
2. Inside the box was a packing slip that showed as ship date of 9/23/2021 (See attachment)
3. Inside the box was the mask in a plastic bag, so it was concluded the mask was unaltered in its form as sent by the manufacturer.
4. The ship date was listed as 9/23/2021, so the mask was concluded to be a recent up-to-date product from the manufacturer. There was no listed information on the mask at all.
5. Within the box was a one page information sheet (See attachment).
6. The information sheet indicated that the mask could be hand washed in cold water or in a washing machine.
7. The information sheet indicated: “this face covering is not medical or surgical grade. The make of this mask makes no claims regarding flammability, antimicrobial protection or infection prevent.”
8. There were no warnings or limitations listed on the packaging or on the mask.
9. The dead air space was measured to be approximately 12 ounces.
10. I, personally, placed the mask on my face to test the air flow.
 - a. The mask was form fitted to my face to get a near snug “form fit” as directed on the instructions.
 - b. Deep breaths were taken to get an understanding of the flow of air with breathing beneath the mask. As with many masks there was a sharing of air leaking around the perimeter and air traveling through the mask material.
 - c. It was concluded that with the correct fitting, much of the air could be made to pass through the material.
 - d. It was also concluded that with small adjustments much of the air could be made to pass around the edges.
 - e. Therefore, it was concluded that it would be difficult to predict the flow on individuals as many mask users have found ways to cope with air restrictions of numerous types of masks.
 - f. Based on the fact there was no limitation or warnings on use, no further evaluation was made with regard to air flow since there would be an unlimited amount conditions based on age, health, and other specific individual situations.

Tidal Volume is Based on Weight

Under free breathing conditions, without any blockage of air, the literature shows that people will generally inhale air proportional to their weight (mass). Therefore, a small child only requires a small volume of air while a larger adult would require a large volume of air. The good thing is we do not have to mentally regulate that. Our bodies do that on their own, and it changes automatically when we need more air during physical exertion.

The literature shows that the Tidal Volume is approximately 7 ml/kg. The following table shows the normal tidal volumes of people with different mass.

Age	Typical Weight		Average Inhale		
	Years	Lbs	Kg	ml	oz
Adult		190	86	605	20.5
Adult		180	82	573	19.4
Adult		170	77	541	18.3
Adult		160	73	509	17.3
18		150	68	477	16.2
17		142	65	452	15.3
16		134	61	426	14.5
15		124	56	395	13.4
14		112	51	356	12.1
13		100	45	318	10.8
12		88	40	280	9.5
11		80	36	255	8.6
10		70	32	223	7.6
9		63	29	200	6.8
8		56	25	178	6.0
7		50	23	159	5.4
6		45	20	143	4.9
5		40	18	127	4.3
4		36	16	115	3.9
3		31	14	99	3.3
2		27	12	86	2.9

The mask had a measured dead air space of 12 ounces.

This was an extremely high value. It exceeds any of the masks that we have tested.

Child Abuse

According to MN Statute 260E.03 Subd 18(c)(5) one of the definitions of child abuse is “unreasonable interference with a child's breathing.” The key word to evaluate would be “unreasonable” because it is clear that there is significant “interference with a child’s breathing” when wearing this mask.

There is no guidance in the state statute that defines who determines “unreasonable.” It is my personal and professional opinion that the child and or the parent should be the one to conclude if it is unreasonable to wear the mask for any amount of time.

Personally, I would not wear the mask for one minute. Breathing through a mask with that much dead air space would be unreasonable for me as an adult to wear. It becomes grossly unreasonable for children.

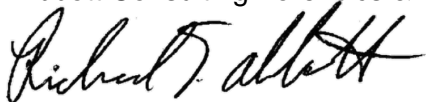
As a side note, 3M which has been a world leader in mask development has refused to manufacture any face mask for a child to use.

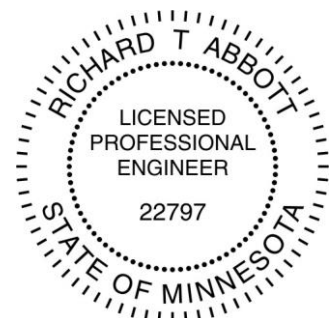
The CDC and MDH have been pressed to see if they have any data to support the claim that masking a child is safe or tested. They have responded and indicated they have no data. More and more professionals are starting to realize that masking a child is dangerous.

I would not put the health of my child’s lungs in the hands of Broadway costume designers. I surely would not allow anyone to force that on my child.

If you have any questions or need additional assistance, please call.

Sincerely,
Abbott Consulting Forensics & Design LLC

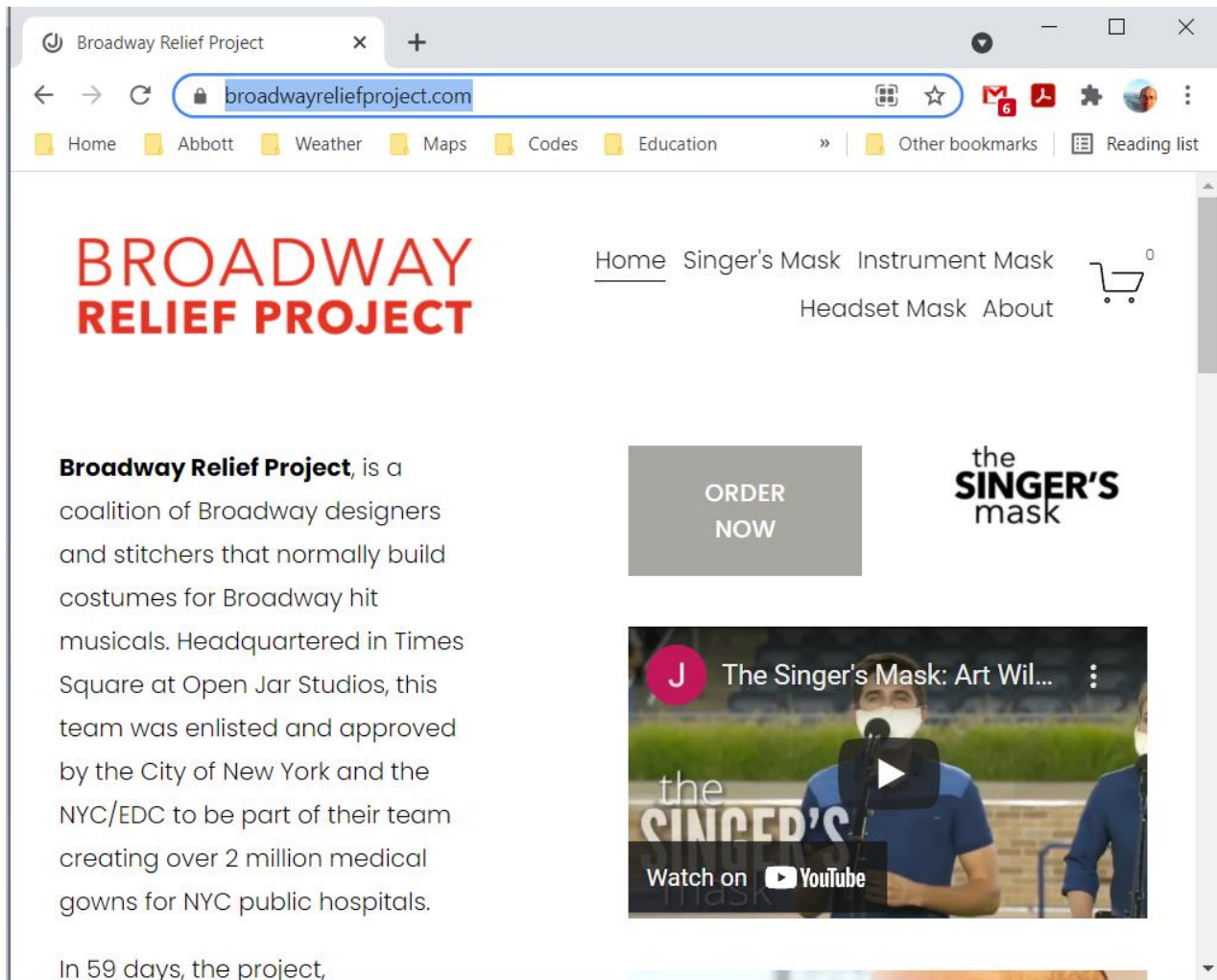

Richard T. Abbott, PE
MN Engineering Number 22797



Observations

The following photographs are representative and are not intended to include all observed conditions that may exist. During the course of the inspection, the following was observed:

Photograph 1: The screen capture of the brodwayreliefproject.com website
Observations: There was no literature on the website regarding testing of the mask on children.
It appears the mask was developed and produced by Broadway costume designers.



Photograph 2: The mask dead space measurement
Observations: Popcorn seeds were used to estimate the dead air space.
The mask was placed on my face and adjusted for a comfortable fit.
The mask was filled with popcorn seeds and placed back on my face to get a comfortable measure of the dead space.
The volume was measured to be 12 ounces.
This would be different based on facial features and was concluded to be accurate enough to get a ballpark value.



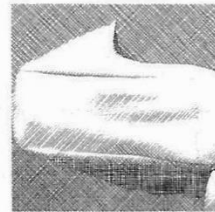
Photograph 3: The information sheet
Observations: There were no warning or limitations.

the **SINGER'S** mask

FINDING THE PERFECT FIT:

The wire along the top of the mask is intended to allow you to form-fit the mask to your face.

The wire is very strong so it will hold any shape you give it. You may need to spend a little time shaping it to form fit your face. When you are bending the wire, take it away from your face.



Manipulate the wire to follow the curve down the side of your nose, the curve of your cheeks and close to the ears. The mask should not press into your cheeks or nose but follow the shape of your face for a comfortable form-fit.

The wire is not fragile so you should not be shy about bending it to fit.

Here is a video tutorial to help:

broadwayreliefproject.com/maskfitting

One other thought is if the mask is too big overall, is that you can toss it in the wash and shrink it. It's 100% cotton so it can, if you let it, shrink quite a bit.

If you do, put it in the dryer until it's almost dry, then put socks or something in the nose to help it keep its form.

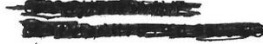
CARING FOR YOUR MASK:

Hand wash in cold water. If placed in washing machine it should be washed alone or with very light-weight items, so the form-fit wire does not get crushed by other items.

When drying, place something in the nose of the mask to maintain the structure of the space inside. When storing, be careful not to fold or crush so you maintain the form-fit nature of your mask.

THIS FACE COVERING IS NOT MEDICAL OR SURGICAL GRADE. THE MAKER OF THIS MASK MAKES NO CLAIMS REGARDING FLAMMABILITY, ANTIMICROBIAL PROTECTION OR INFECTION PREVENTION.

Photograph 4: The packaging sheet
Observations: The ship date was 9/23/2021

Packing Slip		
Broadway Relief Project 1601 Broadway 11th Floor New York, NY 10019		BROADWAY RELIEF PROJECT
Ship To: Sven Gustafson 	Order # 112-5795725-5757038 Date 9/22/2021 User lmz9njx8mc4z1cs@marketplace.amazon.com Ship Date 9/23/2021	
Item	Description	Qty
SQ3385728	The Singer's Mask: Child Loop LIGHT BEIGE	1