

## **PRODUCTION MASK SCUBA TYPE ON UMKM CAHAYA PRINTING**

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### **ABSTRACT**

Scuba mask is a type mask which made from a tight and elastic type of fabric that provides comfort when used. PT. Cahaya Digital Printing is one of companies engaged in digital printing that produces masks which are currently used by the public. The purpose of this study was to analyze production process of scuba masks from raw materials to mask products. The scuba mask production process uses scuba cloth as raw material which though a printing process on a digital printing machine which has a print area of up to 1.5 m with a print speed of up to 15 m<sup>2</sup> per hour to print according design to customer requirement, manual press process to cut the mask to size and scuba printing and sewing and overlay processes using a sewing machine that has a stitch length of 0-5 mm and a sewing speed of up to 4500 s.p.m to sew the edges of the mask to make look neat and not stringy.

**Key World:** Process, Mask, Scuba, Digital, Printing.

### **1. INTRODUCTION**

The process production scuba masks using scuba cloth raw materials which a though printing process on a digital machine The covid pandemic is an epidemic that occurs simultaneously over a wide geographical area, a pandemic is an infectious disease that spreads almost to many people. At the beginning of 2020, the Indonesian state was hit by the COVID-19 virus pandemic which forced the government to require everyone to follow health protocols, one of protocol was wearing a mask when in public area to minimize the spread of the virus. Mask is a personal protective equipment used to protect the nose and mouth from the entry of viruses in the body, the use of masks is believed to be able to prevent the transmission of dangerous diseases caused by viruses which impact on the high demand for mask products. Many kinds of mask products for sale with various types and shapes in the market. One type of mask on the market is a scuba mask. This mask widely used by the public where this mask made of polychloroprene fabric which is a synthetic type of fabric that tight and elastic fibers so it provides comfort when used. Production process is a processing raw materials both imported from suppliers into finished products so that they can be sent to customers, Results The mask production process is neat, attractive and comfortable to use is one main attractions for customers to continue to wear masks which believed to able to prevent themselves from being attacked by dangerous viruses. PT. Cahaya Digital Printing is a company which in digital printing, one of which production is making masks. The formulation this study is how the production process of scuba masks at PT. Cahaya Printing, purpose this research is to know the production process of scuba masks from raw materials to mask products.

### **2. LITERATURE REVIEW**

The process is a method to solve a problem. According to Sukanto Reksohadiprodjo, the production process is an activity to follow the addition of benefits, the creation form, time, and place for production factors that are beneficial to meet consumer needs. Production is a change form of factors production (raw materials, labor, modes, and technology) into a something different which have a value added or products (Setiawati, 2013).

In making a product can be done in several different ways, methods, and techniques. According to Pangestu Subagyo, there are three types of production processes, namely: (Setiawati, 2013)

1. Continuous Process is a continuous production process which is a production process where there is a definite and unchanging sequence pattern and which never changes type of goods being worked on in implementation of production from raw materials to finished products.
2. Intermittent production process is a discontinuous production process caused by changes in production process every time it is interrupted. If there is a change type of goods being worked on. Industrial businesses that use this type usually have a set or more components to be

- processed or waiting to be processed, so they require more work-in-process inventory.
3. Mixed production process (Intermediated) is an intermediated production process which is a mixture of continuous production processes and intermittent production processes caused by different of goods but not too many types of goods and many types goods

The production system is a collection of many sub-systems that interact with purpose of transforming production inputs into production outputs. Inputs for production can be in the form of raw materials, machines, labor, capital, and information. where That input will be processed to finish goods (Nasution, 2008).

The grouping of production systems can be seen from the company's purpose of carrying out its operations in relation to meeting consumer needs. Group production systems based on purpose of their operation can be divided into four types. The following are the types of production systems according to their purpose: (Nasution, 2008).

1. *Engineering to order* (ETO) : This production system is assumed if order asks manufacturer to make a product starting from design process.
2. *Assembly to Order* (ATO): This production system is assumed if manufacturer makes standard designs in the form modules and assembles them according to certain combinations according to consumer orders. These standard modules can be assembled for various types of products.
3. *Make to Order* (MTO) : This production system is assumed if the producer completes its final product after receiving consumer orders for the product
4. *Make to Stock* (MTS) : This production system is assumed if producer makes finished product and placed it as inventory before customer's order is received. The last product will be sent from its inventory system after the customer's order is received.

### 3. RESEARCH METHODOLOGY

This research method was doing in UMKM Cahaya Printing which moving in the textile sector or the process of making cloth by sewing, printing, and pressing with functional textile products of high quality and affordable prices and prioritizing customer satisfaction. This research method doing by direct observation to UMKM and collecting primary and secondary data, The primary data collected a :

1. Data of machines used for production scuba masks
2. Data on raw materials used to manufacture scuba masks

Secondary data collected a:

1. Specifications of machine used
2. Suba mask production process data

Data collected will then be used to describe production process experienced by raw materials become scuba masks.

### 4. RESULTS AND DISCUSSION

UMKM Cahaya Printing produces products made from fabrics through various stages of processing different types machines by adjusting customer requests become mask products as described below :

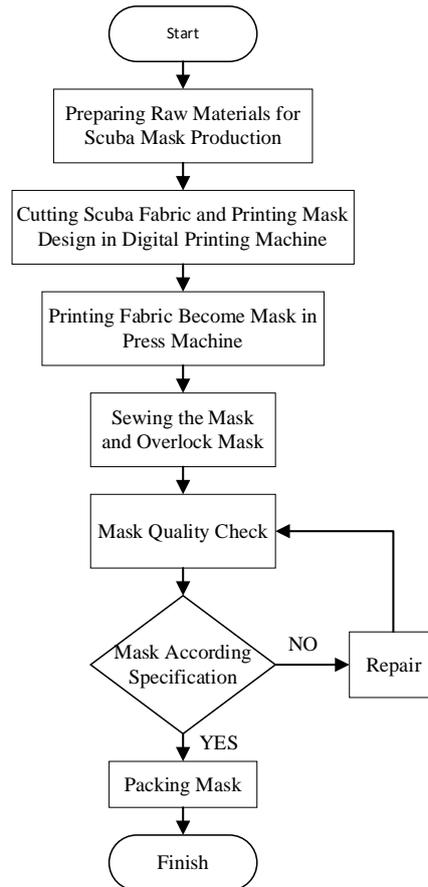


Figure 1. Scuba Mask Production Process Flow

Raw materials used to make scuba masks consist of scuba cloth which is a main raw material, transfer paper to facilitate mask printing process, ink used to print masks and thread to sew masks, the raw materials will then be processed using a digital printing machine to printing a mask design according to customer's wishes, pound press machine for printing scuba shapes, sewing machine for joining masks and trimming the edges of mask so that they are not stringy, Scuba cloth used for production of masks is shown in the following figure:



Figure. 2 Material Mask

Scuba fabric raw materials are imported from suppliers in form of rolls, then the process of printing images, colors, patterns, and text according to digital-based designs using a digital

printing machine using topazrip-X software. The printing media used in digital printing machines is 80gr local paper or special paper commonly called transfer paper. The machine is shown in the following figure 3:



figure 3. Digital Printing Machine

The printing machine used by PT. Cahaya Printing able to print digital images according design on surface of the fabric, the specifications for General Digital Printing specifications used are as follows :

1. Printhead Golden Head Roland 4 color
2. Resolusi up to 720 x 1440 DPI (very soft and smooth)
3. Print Area 1,5 m
4. Print speed up to 15 m<sup>2</sup> per hour
5. Equipped with RIP Colorgate software that is able to produce print colors perfectly

The results of printing masks on scuba cloth are shown following figure :



Figure 4 Results Print Design Using a Digital Printing Machine  
(Source : UMKM Cahaya Printing, 2020)

The formation scuba cloth become scuba mask through a printing process using a pound machine, the raw material for scuba cloth has been cut is then folded become two parts and inserted in press object and then pull the lever on the machine twice to produce the result of printing the cloth into two parts as shown following picture:



Figure 5 The Cutting Fabric into a Mask Shape with a Manual Pound Press Machine  
(Source : UMKM Cahaya Printing, 2020)

The specifications of pound press machine used by MSME Cahaya Printing in making masks have a Weigh of 50 Kg, Dimensions: T. 70 cm x W. 83 cm x L 66 cm. The hydraulic mechanism for lifting and pressing the press in heat press transfer process is called a flatbed because generally This machine uses 2 fields, namely base field and heating field with an electric power of 220 V. Before using the press machine, operator must set temperature, which is 210° by turning knob, then setting time for 25 seconds per single press and adjusting position of selector switch. After press machine is hot condition, place the material we want to press and the image to be print Lower machine handle and wait for the alarm to sound according to the time setting to get the desired result, the press result is shown in the following picture:



Figure 6 Printed Masks

Next, the mask will be sewn and overlaid using a sewing machine as shown in the following figure:



Figure 7 Sewing Machine for Sewing Masks In UMKM Cahaya Printing

The sewing machine used to sew masks used by MSMEs has a machine speed of up to 4,500 stitches per minute, this high speed sewing machine can be used for production in large quantities and is able full 24 hours to operate with a smooth and silent sound. The specifications of the sewing machine used UMKM as follows:

- Machine Type: High speed, straight sewing
- Usage scale: Industrial/convection/garment
- Number of needles: 1
- Stitch length: 0-5mm
- Speed: 4500 s.p.m
- Motor power: 250W
- Automatic lubrication: Yes
- Shoe distance: 6mm
- Material type: light fabric to denim/jeans.

Overlock process to unite two parts into one using an overlock plate, namely standard sewing and using two needles and four threads. In sewing process, a scuba mask must use a neci plate, therefore before sewing it first changes the overlock machine into a neci machine that uses one needle and three threads by changing the overlock plate into a neci plate with the same shape but different fingers, which is longer. special small Neci's instantly. The finished mask is then wrapped in clear plastic for packing before being given to customer as shown in the following picture :



Figure. 8 Result Production Mask Scuba

## 5. CONCLUSIONS AND SUGGESTIONS

### 5.1 Conclusions

The scuba mask production process uses scuba cloth as raw material which undergoes a printing process on a digital printing machine with print area of up to 1.5 m with a print speed of up to 15 m<sup>2</sup> per hour to print according design from customer, manual press process with a pound press machine to cut

mask according size and print scuba as well as the sewing and overlay process using a sewing machine that has a stitch length of 0-5 mm and a sewing speed of up to 4500 s.p.m to sew the edges of the mask to make it look neat and not stringy.

## 5.2 Suggestions

Suggestions that can be given regarding the production process of this mask are then taken into account the planning of raw material requirements for the production of masks in order to minimize inventory in storage warehouses.

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