

ACCIDENT PROTECTIVE MANHOLE COVER

Amit Patil¹, Prasad Joshi², Rahul Joshi³, Atul Dhavale⁴

¹Assistant Professor, Dept. of Mechanical Engineering, Textile and Engineering Institute, Ichalkaranji, MH, India

²Associate Professor, Dept. of Textile Engineering, Textile and Engineering Institute, Ichalkaranji, MH, India

³Assistant Professor, Dept. of Mechanical Engineering, Textile and Engineering Institute, Ichalkaranji, MH, India

⁴Assistant Professor, Dept. of Textile, Textile and Engineering Institute, Ichalkaranji, MH, India

Abstract - Nowadays, Road accidents in India are increasing day by day. Getting into road accident can lead to several unwanted consequences, including permanent injuries or even death. The causes of these accidents are due to human error, Over speeding, due to weather, faulty road fixture and pit of manhole cover.



Figure 1.1 Pictorial View of Manhole cover

It is very important to focus on such problems that daily it can harm to our life because of road construction. Manhole allows traffic to pass over them and prevent people from falling into pit and most manhole covers are placed over the road traffic lanes. The distance between road level and manhole is increased due to adding road layer during making new road. Because of that, on road big pot hole can create and many of bike rider, bicycle, car etc get into accident.

In this project we are developing non woven sheet to cover the manhole which have high compressive strength and easy to remove for maintainer which will also provide road safety and prevent accident.

1. Introduction

A manhole is a large hole in a road or path, covered by a metal/Concrete plate that can be removed. Workers climb down through manholes when they want to examine or clean the drains. The purpose of a manhole is to provide a junction for several underground pipes, and/or to provide a maintenance location for whatever the pipes are supplying. Manhole allows traffic to pass over them and prevent people from falling into drainage and most manhole covers are placed over the road. The gap between road level and manhole level is increased due to addition of new road layer. Addition of new road layer generates a big pot hole on the road and many of bike rider, bicycle, car etc get into accident. In this project we are developing non woven sheet to cover the manhole which have high compressive strength and easy to remove for maintainer which will also provide road safety and prevent accident

1.1 Objective

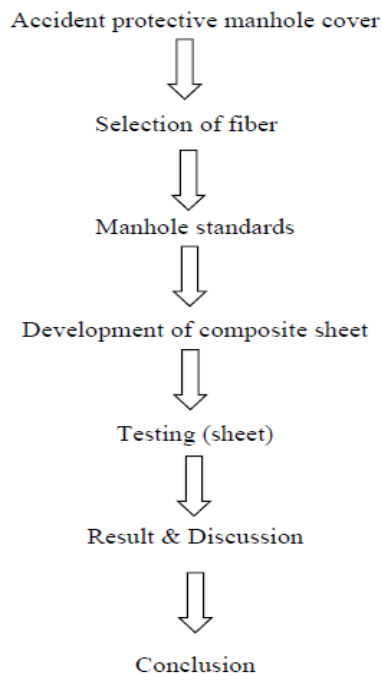
To increase the road safety by filling pot hole of man hole by non woven composite to avoid the road accidents and to minimize the maintenance time

Object of the Project:

- Developing non-woven composite to avoid road accident caused by pot hole of manhole cover.
- To minimize the maintenance time.
- To avoid the re-leveling of manhole cover to road level.

2. Methodology

Initial different fiber are studied and we found out that recycled Polyester fibers are extremely strong, durable, resistant to most chemicals, hydrophobic in nature and quick drying. It retains its shape, readily available and less expensive. Then man hole standards are studied. Then development of non-woven composite sheet was done by using different gsm and tar as binder. And then the non-woven composite sheet was tested for abrasion and compression



3. Results & Discussion

Abrasion Test

Sl.No.	Gsm	Initial Weight (Gm)	Final Weight (Gm)	Initial Thickness (mm)	Final In Thickness (mm)	% Reduction In Thickness
1	400	58	58	18	15	16.67%
2	400	62	64	15	13	13.33%
3	400	60	62	15	12	20.00%
4	150	70	66	15	12	20.00%
5	150	68	65	14	10	28.57%
6	150	73	68	17	13	23.53%

Table 3.1 Results of Abrasion Test

Compression Test:

Sl.No	Gsm	Width (mm)	Breadth (mm)	Initial Thickness	Final Thickness	% Reduction In Thickness
1	400	135	165	16	14	12.50%
2	400	120	160	15	12	20.00%
3	400	128	156	16	14	12.50%
4	150	120	158	13	8	38.46%
5	150	124	160	16	11	31.25%
6	150	125	160	14	10	28.57%

Table 3.2 Results of Compression Test

The abrasion test was carried out on abrasion texting machine with three samples of 150 and 300 gsm each .and the Compression texting was done on universal tensile testing machine and load of 100 KN and 130 KN is

applied on the sample in two steps while compression test we made sure that no access amount of tar came out from the sample.

4. Conclusion

In abrasion test Average percentage of thickness reduction is 16% in 400 gsm and 24% in 150 gsm. There is some weight gain in the composite but that due to impregnation of wear particles in the composite. It is very clear that 400gsm polyester has good abrasion resistance.

Observation showed that average percentage change in thickness is 15% for 400 gsm and 37% for 150 gsm sample. Here also 400 gsm polyester is better in compression.

5. Future Scope:

- 1) The concept can be modified as quick road making technique.
- 2) The experiment can be repeated using polypropylene fibers or any other fiber

6. References:

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