

## Noise Pollution Control: A Review

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### ABSTRACT

Increasing use of electrical and mechanical appliances at home and industries has created a concern for noise pollution created by them. Urbanization and heavy growth of construction work in every neighbourhood further emphasize the need of new technologies for noise reduction. Noise created by different machines can be controlled either by suppressing the noise generating factors or by using the noise proofing agro materials which help to reduce the acoustic wave's energy by blocking or absorption. Maize, rice straw, and coconut fiber these agro products help to reduce the noise pollution. Newspaper waste also used as noise absorbing materials.

**KEYWORDS:** Agro waste materials, maize, rice straw, rice husk, newspaper waste, gypsum, natural latex

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### I. INTRODUCTION

Now a day's, commercially available sound absorption materials for acoustic treatment used in the building construction industry consists of glass or mineral fiber materials. However, they are growing concern health and safety issues due to the potential health risks associated to these fibers when exposed to the human such as the effect from the fiber shedding from glass or mineral fiber to human lungs and eyes. These issues provide an opportunity for an alternative material from organic materials. The growing environmental awareness strategies espoused in today's world demands the industries to treat wastes as a resource that should be valorized for developing new products. In 2014, 32 million tons of textile and wood wastes and 68 million tons of paper wastes were generated which accounts around 39% of total municipal solid wastes which is generated every year in the United States.

In India, as per the studies conducted by Central Pollution Control Board (CPCB) New Delhi, this proportion generated varies from 3-10%, 30-45% and 1-5% of paper, wood and textile wastes respectively. However, these wastes generated from the industries

have been increasing gradually every year and needs to be recycled or reused. Reusing of these wastes is better than recycling porous materials are widely used as sound absorbing substances in noise control engineering. They consist of various synthetic materials like glass wool to minerals and agro-based foams and fibers. The microscopic modeling of sound propagation in porous materials is extremely complicated.

In recent years, it has been difficult to obtain solid woods, and this causes problems for wood-based industry. To meet the standards required for a high-class residential environment, substitute wood-based materials (plywood, MDF, and particleboard), including natural materials and composites of steel or chemical materials are required as construction materials theoretical explanation of saturated porous materials which is easier to be used. Agricultural lignocellulose fibers such as rice straw and wheat straw can be easily crushed to chips or particles, which are similar to wood particle or fiber, and may be used as substitutes for wood-based raw materials.

## II. LITERATURE REVIEW

K Nagasahadeva Reddy et.al (2020) carried out experimental study on noise control by using agro waste produced like maize, rice straw and binding materials like adhesive and gypsum. In this paper they have prepared acoustic board of various proportion of using agro waste. They carried out various test such as water absorption, sound absorption test on the board. In conclusion of the study, they found that this board can reduce the unnecessary sound.

Dr. Kumar A. and Shruti (2020) have carried out study on Analysis of sound absorbing panel using agro waste products. In this paper, they used rice straw, bamboo agro waste and polypropylene as a binding material for their study. To achieve good strength, agro waste concentration was divided into 3 different ratios for specimen. They carried out flexure test, moisture absorption test and impedance tube test on the specimen. They found that all these natural fibers have excellent physical and mechanical properties and can be utilized more effectively in the development of composite material for various building application.

A Saleh, et.al(2020) have carried out study on potential of using agricultural waste (orange peel) and empty water bags in the production of sound absorption panel. For this study, they used orange peel and polythene as resin along with 2.5mm mesh sieve. Resin is chemical material that binds the fiber together to produce particleboard. They prepared six samples i.e. 280gm of orange peel and 120gm of pure water bags respectively. These sample transfer to compound machine one after one. The temperature of compound machine was set to 150<sup>0</sup> C for 30 minutes. The hot paste was removed from roll mill and transferred into a mold of 20cm. From this study, they found that the composite is good sound absorber.

Ebrahim Taban, et.al (2019) have Carried out study on experimental and mathematical survey of sound absorption performance of Date Palm fibers. For this experimental study, they used date palm natural fiber and polyvinyl alcohol. They made 3 sample of thickness of 20mm, 30mm and 40mm and constant density of 65kg/m<sup>3</sup>. Result found from this experimental test shows increased in thickness of sample can further enhance their sound absorption coefficient.

Balan A.V. and shivasankaran N. (2019) Carried study on noise control using waste materials. In this paper they have used newspaper waste, maize waste and textile waste. They have prepared seven samples with various proportions. They use impedance tube instrument for sound measurement. From this study,

they found that maize waste and textile waste have more sound absorption up to 800 Hz.

Ricky Dave T. Mercado et.al (2018) carried out study on the potential of selected agricultural wastes fiber as acoustic absorber and thermal insulator based on their surface morphology via scanning electron microscopy. They use coconut husk, sugarcane husk, banana pseud stem for the study. In this study, they prepared samples by using agro waste and they carried out flame test, water absorbing capacity test, sound absorbing capacity test on sample. They found that, coconut husk have good sound absorbing capacity and thermal insulation.

Son T. Nguyen (2017) carried out study on Green aerogel from Rice Straw for thermal acoustic insulation and Oil spill cleaning Applications. This study was carried out on green aerogels from rice straw for thermal acoustic insulation. For this experiment rice straw, ethanol, cationic, starches were used to prepare sample. After preparing three-sample sound absorption test has carried out. From this study, they found that aerogels have high oil absorption capacity (up to 13g/g).

## III. CONCLUSION

Noise pollution is one of the major type of pollution which cause various health effects on living being. There is a need to minimize the noise pollution increasing day by day. From this review study it has been observed that various studies were carried out and efforts have been taken by various governing bodies to minimize Noise pollution and its ill effects, but still there is a need of more attention to be given for Noise pollution and its control.

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