International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 06 Issue: 03 | March - 2022 ISSN: 2582-3930

USE OF EXPANDED POLYSTRENE (EPS) IN PLACE OF NATURAL MATERIAL

Mr. Danish Ansari (Mentor)
Mohammad Asif Siddique , Mohammad NajeemVarsi , Mohammad Tabrez

Department of Civil Engineering
BACHELOR OF ENGINEERING
ANNIE INSTITUTE OF TECHNOLOGY & RESEARCH CENTRE, CHHINDWARA (MP)

RAJIV GANDHI PROUDYOUGIKI VISHWAVIDYALAYA
BHOPAL (M.P.)

Abstract

Expanded polystyrene (EPS) is a thermoplastic material, derived from pre-expanded polystyrene beads, that combines an extreme lightweight with versatile strength and thermal insulation. These characteristics made EPS an excellent alternative to natural materials for the feasibility of building and construction projects that would otherwise destined, for time and implementation costs, to be postponed or alienated. Specifically, this technology has been successfully used in road infrastructure sector in the last twenty years in the construction of roads, bridge abutments, lightweight embankments and back fills, above all for the rapid restoration of compromised roads following landslide or calamitous events, representing an interesting and resilient solution in areas exposed to seismic risk or persistent vibratory actions. Thus, the authors want to offer a critical analysis of different EPS road applications in Italy, considering benefits and drawbacks, proposing technical and economic considerations for ideal conditions of use and suggesting failure analysis methods and tools.

1 Introduction

This chapter describes the development of a bridge of use Expanded polystyrene (EPS) and to cover the environmental, social, economic, and alternate of natural material relevant for the project study areas.

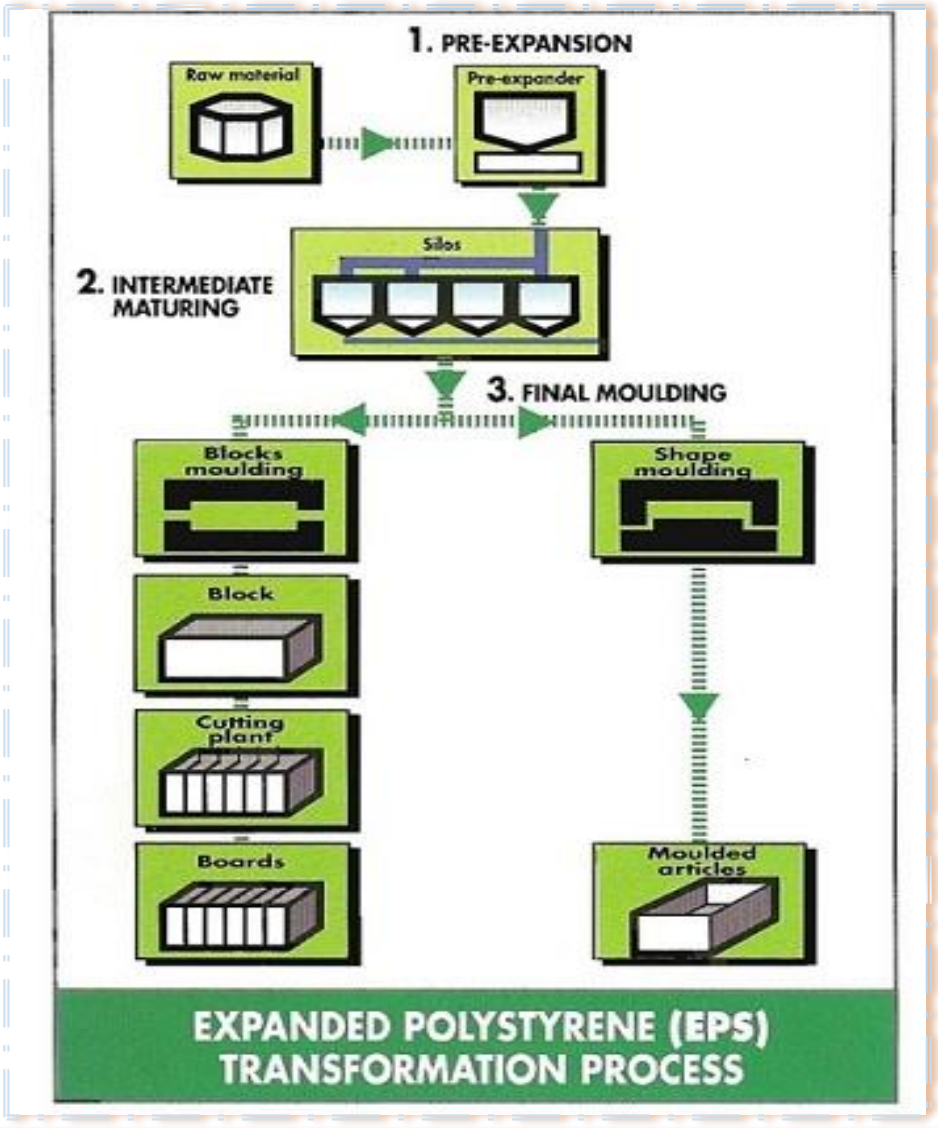
Polystyrene is made by stringing together or polymerising, styrene .When made into a foam material called expanded polystyrene(EPS)

Expanded polystyrene (EPS) are used as insulation in wall's roof and foundations and serves as a road material and insulated concrete forms (ICF).

Expanded polystyrene (EPS) properties are Mechanical (Tensile Strength,Elongation, Creep,Flexural etc.), Physical properties (Density,filler content ,viscosity), Electrical properties, Thermal properties ,Processing properties (moisture resistance).

Expanded polystyrene (EPS) is very light weight with very low thermal conductivity,low moisture absorption and cushioning properties. EPS is 98% Air and it's recyclable. It's low cost material.

2 Expanded polystyrene (EPS)



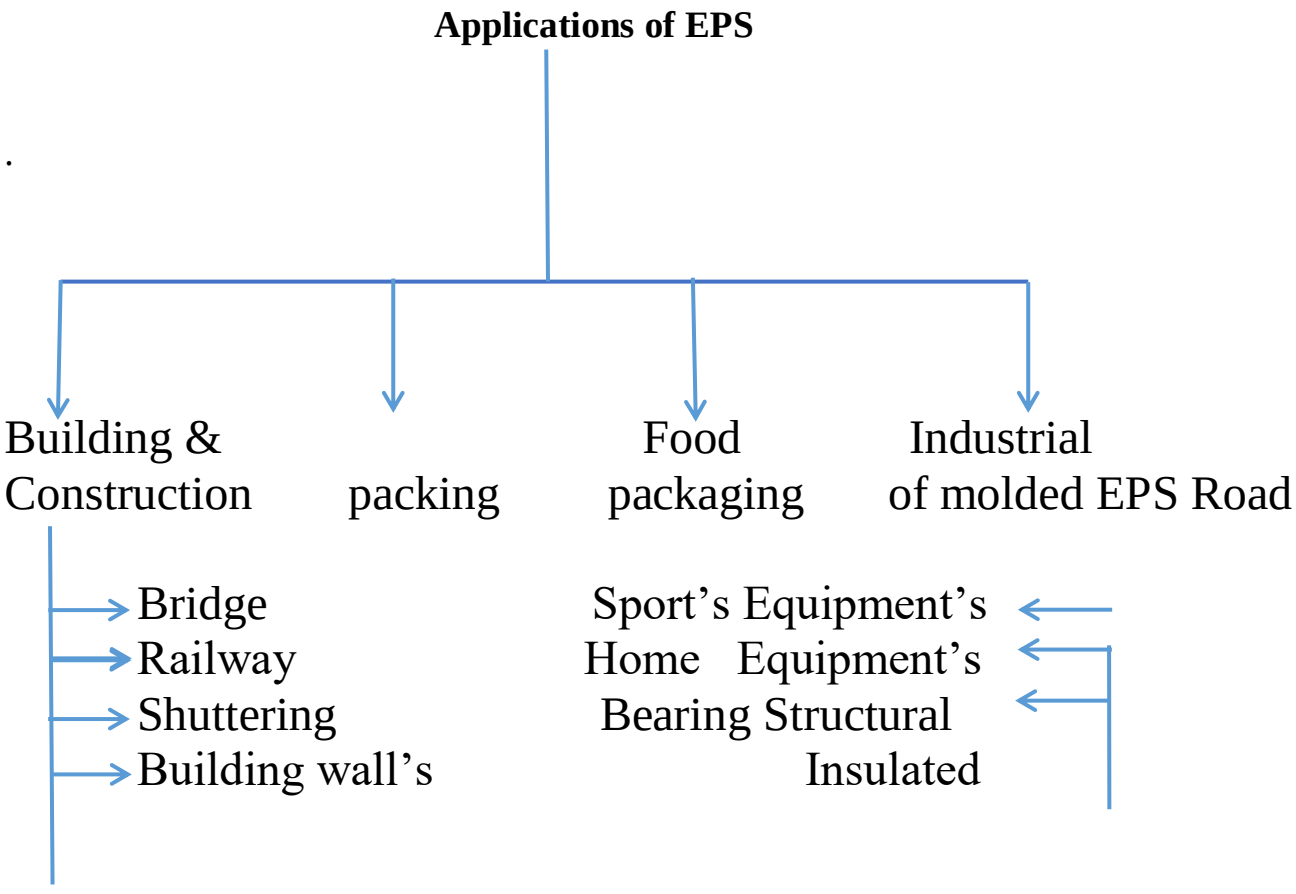
3 Material requirement's

Compressive strength ⟶ at least 100kn/㎡

Dimensions ⟶ at least be 0.5m

Flammability ⟶ SE quality block should have an oxygen index >25 as described in ASTMD-2863 ,or grading B1 according to as DIN specifications

4 Application's & recommendations



This material recommended by wood, filling material and shuttering material in construction area.By using EPS we can reduce the use of wood because wood is natural and limited material. It's is very important for ATP.

Now a days EPS technology use in kenya and Europe countery. So we thing use of EPS technology should be promoted in India because there is a lot of plastic waste here.

6 Conclusion

The research reveals decent housing remains , other construction (Like :- Road filler material etc.) a big challenge for the larger populations in INDIA (Approx. 250 crore) and other developing countries. Although EPS technology was invented 30 year ago but unfortunately it has not been developed in India. It's a very good,cheap and Environment friendly material.It's very usefull in P.M. AVASH YOJNA (2 crore house build under the scheme).

ACKNOWLEDGEMENT

It gives us immense pleasure to express our hearty gratitude to our project guide **Mr. Danish Ansari** department of Civil Engineering. Annie institute of technology & research center, chhindwara (MP) for providing invaluable guidance and constant encouragement throughout the period of this work.
It's our privilege to have worked under his esteemed guidance without his all-round support it would not have been possible to complete the work within the specified time. His insight in to the subject and critical suggestion always gave us simpler ways of dealing with problems.

We express our sincere thanks to **Mr. Danish Ansari** Head of the Department, Civil Engineering, and. Annie institute of technology & research center, chhindwara (MP) for his co-operation and for providing all required facilities to complete this project.

We are also thankful to Principal, Annie institute of technology & research center, chhindwara (MP) providing all necessary facilities during the course of this project.