IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 6, April 2025
Impact Factor: 7.67

Use of Polyalk WP Chemical in Terrace Waterproofing

Prof. Mayur Suryawanshi[1], Ms. Salvi Shariva Sachin[2], Mr. Kadav Bhagyesh Kashinath[3], Mr. Singh Sairaj Anilkumar[4], Ms. Tannu Brijesh Khandelwal[5]

[1,]Assistant Professor, Department of Civil Engineering
[2,3,4,5]B.E. Students, Department of Civil Engineering,
G. A. Acharya Institute of Engineering and Technology, Shelu

Abstract: *Waterproofing is the treatment or protection of structures and objects that makes them waterproof. It acts as a barrier for terraces, walls, roofs, and other systems, keeping them away from water, soil moisture, etc. Waterproofing is a crucial process that protects buildings and structures from preventing damage to the structure and its contents. Whether it's a residential, commercial, or industrial structure, waterproofing plays a vital role in maintaining the integrity and longevity of the building.*

Keywords: Waterproofing

I. INTRODUCTION

Waterproofing is the treatment or protection of structures and objects that makes them waterproof. It acts as a barrier for terraces, walls, roofs, and other systems, keeping them away from water, soil moisture, etc. Waterproofing is a crucial process that protects buildings and structures from preventing damage to the structure and its contents. Whether it's a residential, commercial, or industrial structure, waterproofing plays a vital role in maintaining the integrity and longevity of the building. Roof /Terrace is the most crucial segment of a building from water leakage point of view and assumes greater significance in case of large plan terraces of buildings, and it is exposed to direct climatic variations, extremes of rainfall and structural movements caused thereby and every effort should be taken at the design stage, to ensure that a proper protection system has been incorporated. It has often been found that the economic solution is not always the best solution. So, the system, which assures maximum protection, should be selected even though it may cost little more. The structure is water proofed by various methods from the footings to top levels of a structure as well, membrane and protective coatings are one of the main and compatible methods to protecting in structure integrity. This stage is called building envelope. Therefore the compatibility of materials, their interaction, connect of the building enclosures altogether also judge the performance of the building. The performance may separate by the weathering factors and water, rain water; drainage outlet plays the major role. Water proofing gives protection from the weathering chapters, seepages. Leakages and vertical travel of water in a structure and the well protected by the application of water proofing system. Modern water proofing system is deal with gushing waters seepages porosities joint leakages protective coatings membrane coating, structural penetration natural stone protection membrane coating. Various and specific coats of certain properties of chemicals allows the process of multiple tasks with ease of the par ell effect of energy conservation occurs because of the use of the material involved in the process. This largely includes the codes and external wall and floors of weathering characters. Water proofing system can also be stated structural protection and rehabilitation or renewable engineering, because of it multi action ability and important. its not a process system to implement into structures it holds the dignity in grading the site. Grading refers the identification control, and significant. Water proofing system is a technique applicable not only to the building envelop as a whole, it is a specific part of structure.

Objective:

- To analyse water dripping problem
- To understand the application of waterproofing material

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 6, April 2025 Impact Factor: 7.67

- To remove all the crack in top floor and leakage from the terrace

II. LITERATURE REVIEW

YASH. A. SANGLE, SWATI. B. KSHIRSAGAR (MAY 2020): In this paper they come to the conclusion that the chemical selection as per the required site condition play a vital role in minimizing excessive cost. Beck proof WAC has excellent waterproofing and protection properties Due to its outstanding adhesion to construction materials. It should be used as a good waterproofing chemical at Terraces, Toilet, balconies, chajjas, canopies.

Prof.Mr.VivekT.Babar, Mr.Samrat S. Dhumal, Mr.Jaid I. Shikalgar, Mr.Makarand M. Shinde, Mr.Shreyash M. Sawant, Mr.Sanket S. Jadhav, (July-2021): Study Of Water Proofing System And Material. In this report include the study of Specification of waterproofing material, performance of waterproofing material on site and also identifications of problem on leakages, Dampness, On roof surface wall surface and many other components. And also, the spreading the awareness of maintenance of building to citizen. And to avoid this all defects we are Using various Water Proofing materials using various methods. Ex: -chemical waterproofing, brickbat coba, Bituminous Coating, etc.

Mr. Sujitkumar S. Bhure, Mr. Samrat S. Dhumal (June 2017): This case study is an examination on waterproofing techniques for Buildings. Waterproofing has become a basic part of a structure to ensure its stylish appearance, prevent basic harms and for the security of the inhabitants. In like manner, the type and technique for waterproofing required may vary with the area and atmospheric (climatic) conditions.in this This paper we study about different chemicals which use for terrace waterproofing.

Shri Ram Chaurasia (2001): In his paper said about the influence of water on concrete and the remedial measures. waterproofing helps to reduce water absorption and prevents the concrete floor from developing cracks. It also guards against moisture coming inside the building structure and prevents seepages from the walls and ceiling.

Srinivasa Reddy (2000): presented a paper about elastomeric cementitious coatings for waterproofing and concrete protection. It deals about the importance of waterproofing of roof slabs, basements, floors, terrace gardens, sunken slabs etc. These are the major challenge to the Civil Engineers. Poor quality of waterproofing not only causes inconvenience to the occupants but also reduces the durability of restructures by way of corrosion of rebars. Waterproofing like any other aspect of the construction engineering needs to be understood, analysed and designed for a suitable system on a case to case basis, before implementation through experienced professional applicators.

Asthana et al (2003): analysed about the problems and solutions for waterproofing in building. This paper says that one of the chronic problem in the construction industry is obtaining a defect free work, avoiding ingress of moisture in the buildings.If such seepage is allowed to continue,then unhygienic conditions will prevail and also the building may deteriorate to the extent that ultimately it becomes uninhabitable.In many cases the durability of the structure itself is seriously affected .Ingress of water or dampness or atmospheric pollution in the RCC structures results in corrosion of steel and spalling of concrete.

Ra.Jaikishan, M.Adiyaman (February 2018): Study of Waterproofing System in Construction Industry , Building Construction involves drawings estimations, workmanship, proper maintenance and the natural factors of a project /building is so called as a successful project. It should match the entire above mentioned characteristic. A building is a human made structure used for supporting various benefits of human society. Construction quality is the major factor and important task to deal with and avoid before time degradation of a structure. Water related problems are the silent killers and playing a virtual role of a maintenance and durability of the building.

III. METHODOLOGY

Waterproofing Using Chemical

The method of waterproofing surfaces using chemical is a process that involves applying a chemical layer over the surface to be protected in order to prevent the penetration of water or other liquids that could cause damage. The most common waterproof chemicals are polyurethane, Polyalk, epoxy, and Bituminous Waterproofing etc. We are using POLYALK WP chemical for our project and it is a most effective and proven polymeric waterproofing solution. This technique is commonly used in terraces, bathrooms, kitchens, slabs and roofs to protect against moisture and ensure that water doesn't penetrate through.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 6, April 2025 Impact Factor: 7.67

FACTORS AFFECTING WATERPROOFING

Several factors influence the selection of waterproofing solutions for a particular project.Understanding these factors is crucial for choosing the most appropriate waterproofing system that meets the specific requirements and challenges of the structure. Here are the key factors that influence waterproofing solutions.

- **Type of Structure:** Different structures have different requirements. The waterproofing needs of a residential building may vary from those of a commercial or industrial structure.Understanding the specific requirements of the structure is essential in choosing the right waterproofing method
- **Location and Climate:** The climate and environmental conditions of the project location play a vital role in determining the suitable waterproofing solution. Factors such as rainfall intensity, temperature variations, humidity levels, and exposure to UV radiation can affect the performance and durability of waterproofing materials. For instance, regions with heavy rainfall may require more robust waterproofing systems to withstand water pressure and prevent leaks.
- **Maintenance and Repair:** Regular maintenance and timely repair are essential for the longevity of waterproofing systems. Neglecting maintenance can lead to the deterioration of waterproofing materials and compromise the effectiveness of the system.
- **Quality of Materials use:** The quality of materials and the skill of installation significantly affect the performance of waterproofing systems. Using high-quality materials and employing experienced professionals for installation can enhance the effectiveness and durability of the waterproofing.
- **Occupancy and Intended Use:** The occupancy and use of the building impact the

waterproofing needs. For instance, waterproofing requirements for a parking garage will differ from those of a residential building. Understanding the intended use of the structure is crucial for selecting the appropriate waterproofing method.

Test to ensure the effectiveness of the treatment After completing the terrace chemical waterproofing using Polyalk WP chemical, it's essential to conduct tests to ensure the effectiveness of the treatment. Here are some testing methods you can employ.

Water Test

• Perform a water test by pouring water onto various sections of the treated terrace surface. • Observe if the water beads up and remains on the surface without penetrating or if it absorbs into the material.

• Check for any signs of water infiltration or leakage, especially in areas prone to water accumulation or penetration.

Visual Inspection

• Conduct a visual inspection of the entire treated terrace surface.

• Look for any cracks, gaps, or areas where the waterproofing treatment may not have been applied evenly or thoroughly.

• Inspect joints, seams, corners, and edges for signs of water ingress or damage. **Moisture Meter Testing**

• Use a moisture meter to measure the moisture content of the terrace surface.

• Compare the moisture levels of treated and untreated areas to determine the effectiveness of the waterproofing treatment.

• Ensure that the moisture levels are within acceptable limits for the specific application and material type.

Surface Temperature Test

• Measure the surface temperature of the treated terrace using a surface temperature gauge.

• Compare the temperature of treated and untreated areas to ensure that the waterproofing treatment has not significantly affected the surface temperature.

Benefits & Limitations Chemical waterproofing refers to the process of using chemical compounds to make surfaces or materials resistant to water penetration. This method has its own set of benefits and limitations:

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 6, April 2025
Impact Factor: 7.67

Benefits

- Effective Waterproofing: Polyalk WP waterproofing provides reliable protection against water ingress, preventing issues such as leaks, dampness, and structural damage.
- Versatility: Polyalk WP chemical can be used on various surfaces, making it suitable for a wide range of applications, including terraces, roofs, basements, and balconies.
- Ease of Application: In many cases, chemical solutions are easy to apply, often requiring simple brushing, rolling, or spraying onto the surface.
- Longevity: When applied correctly, chemical waterproofing can provide long-lasting protection against water damage, extending the lifespan of the treated surface or material.
- Cost-Effectiveness: While the upfront cost of Polyalk WP waterproofing may be higher than traditional waterproofing methods, its durability and longevity often result in cost savings over the lifespan of the structure.
- Penetration: Chemical waterproofing solutions often penetrate deeply into the material, creating a durable barrier against water intrusion. This can be particularly advantageous for porous materials like concrete or masonry.

Limitations

- Application Skill: Even if is easy to apply, but require specialized or professional staff for proper application. Improper application can lead to ineffective waterproofing or even damage to the treated surface.
- Temperature and Humidity: Chemical waterproofing materials may have limitations regarding application in certain weather conditions. Extremely low or high temperatures, as well as high humidity, may affect the application and curing process.
- Surface Preparation: polyalkwp or Chemical waterproofing often requires extreme care and surface preparation. If the surface is not properly cleaned, prepared, or if there are cracks and uneven areas, the effectiveness of the treatment may be compromised.
- Environmental Impact: Some chemical waterproofing products contain volatile organic compounds (VOCs) or other harmful chemicals that can have negative environmental impacts during manufacturing, application, or disposal. Environmentally-friendly alternatives are available, but they may have limitations in terms of performance or availability.

Causes of Terrace Leakage

Terrace leakage can stem from various factors, ranging from poor construction practices to environmental conditions. Understanding these causes is crucial for effectively addressing and preventing terrace leakage. Here are some common causes:

Poor Waterproofing: Inadequate or faulty waterproofing is one of the primary causes of terrace leakage. If the terrace surface is not properly sealed against water penetration, it can lead to leaks during rainfall or when water pools on the surface.

Cracks and Gaps: Cracks in the terrace surface or gaps in joints and seams provide pathways for water to seep into the underlying structure. These cracks can develop due to shrinkage, settlement, thermal expansion and contraction, or structural movements.

Improper Sloping: A terrace should be constructed with a slight slope to ensure proper drainage of rainwater. If the slope is insufficient or uneven, water may accumulate on the surface, increasing the risk of leakage.

Faulty Construction: Poor construction practices, including inadequate compaction of materials, improper installation of waterproofing membranes, and insufficient reinforcement, can compromise the integrity of the terrace structure and contribute to leakage issues.

Deterioration of Materials: Over time, terrace materials such as concrete, mortar, and waterproofing membranes may deteriorate due to exposure to environmental factors such as UV radiation, moisture, temperature fluctuations, and

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 6, April 2025
Impact Factor: 7.67

chemical exposure. Deteriorated materials are more prone to leaks and water damage. Clogged Drainage Systems: If the terrace drainage system, including gutters, downspouts, and drains, becomes clogged or blocked, it can prevent rainwater from draining properly, leading to water accumulation and potential leakage.

REFERENCES

[1]. https://sunandaglobal.com/waterproofing-coatings/
[2]. https://en.wikipedia.org/wiki/Speciality_chemicals
[3]. https://www.designingbuildings.co.uk/wiki/Construction_chemicals
[4]. https://wecivilengineers.wordpress.com/tag/construction-chemicals-wikipedia/
[5]. YASH. A. SANGLE, SWATI. B. KSHIRSAGAR (MAY 2020): water proofing system in construction.
[6]. Mr. Sujitkumar S. Bhure, Mr. Samrat S. Dhumal (June 2017): "Investigating effective waterproofing material in preventing roof leaking; initial comparative study".
[7]. Prof.Mr.VivekT.Babar, Mr.Samrat S. Dhumal, Mr.Makarand M. Shinde, Mr.Sanket S. Jadhav, (July-2021): Study Of Water Proofing System And Material
[8]. Shri Ram Chaurasia (2001): case study on the influence of water on concrete and the remedial measures
[9]. Agarwal (2001): presented study about the details of Chemical waterproofing
[10]. Ra.Jaikisha1, M .Adiyaman (February 2018): Study of Waterproofing System in Construction Industry