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Theoretical Research Paper Based to Develop a BIO-Degradable, Economical with Zero Carbon Foot Print, Water Storage and Discharge Device Operated through Weather temperatures and water demand of the Platform.

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Abstract : This study has been undertaken to Develop a product for the purpose of curing store of water the Water transportation and availability is difficult

INTRODUCTION

The product is Super Absorbent, Super Retainer and super Container of water in open and dry Land, Will be super Compost, Will be a super a supplement, Will be a super fertilizer, Will reacts per the weather, Will recharge as per the availability of the Water, Will discharge as per the requirement of soil

NEED OF THE STUDY.

To develop a Product to solve the Issues of water Curing and Use of Water in Agriculture and Construction Field. The developing Product is said to be need to recharge With Water By once in a week Twice in a Month.

3.2 Data and Sources of Data

For this study Data is collected form General Search in Google

3.3 Theoretical framework

Variables of the study contains dependent and independent variable. The study used pre-specified method for the selection Ingredient.

3.3 Theoretical framework

Ingredient-001 ---- Agar - $C_{14}H_{24}O_9$
Ingredient-002 ---- Sodium polyacrylate [−CH2−CH(CO2Na)−]n
Ingredient-003 ---- PEG-diacrylate $C_8H_{10}O_4$

Agar is a galactose-based heterogenous polysaccharide derived from red algae.It is a heterogenous polysaccharide composed of agarose and agaropectin polymers. A typical agar composition is 70% agarose and 30% agaropectinagar is typically dissolved in water and heated to boiling to completely dissolve it. The solution is then sterilized and poured into sterile dishes to solidify. To dilute agar so that it can melt at 40 degrees Celsius, we can adjust the concentration of agar in the solution. Generally, a higher concentration of agar will require a higher temperature to melt

Sodium polyacrylate is a type of superabsorbent polymer that can absorb and retain a large amount of water. It is a sodium salt of polyacrylic acid, a synthetic resin made by polymerizing acrylic acid. Sodium polyacrylate is commonly used in various applications, including as a water-absorbing material in diapers, feminine hygiene products, and other absorbent materials. It is also used in agriculture to improve soil water-holding capacity, as well as in firefighting and oil spill cleanup to absorb water and oil.

Polyethylene glycol (PEG) crosslinkers: PEG crosslinkers, such as PEG-diacrylate or PEG-Di methacrylate, can be used to crosslink SAP and agar gels. PEG crosslinkers can react with the hydroxyl and amino groups on the SAP and agar molecules to form stable covalent bonds, creating a crosslinked gel with improved mechanical strength and stability.

Assumptions and possibilities regarding the Product

Assumptions:

Agar and SAP + PEG may have different physical and chemical properties that could interact in various ways when combined. The properties of the mixture would depend on the relative amounts of agar and SAP + PEG in the mixture. The mixture may not be homogeneous, and the distribution of agar and SAP may vary throughout the mixture. The mixture may exhibit different properties depending on the specific application and conditions of use.

Possibilities:

The addition of SAP to agar could increase the water retention capacity of the mixture, which could be useful in applications such as plant growth media or wound dressings. The mixture may exhibit a unique combination of properties, such as both gel-like and absorbent behavior, that could be useful in certain applications. The mixture could be difficult to homogenize or may exhibit phase separation, depending on the specific conditions of mixing and the properties of the materials. The properties of the mixture could change over time, due to factors such as moisture content, temperature, or chemical reactions between the materials. The addition of SAP to agar could alter the gelling behavior of agar, potentially making it more or less effective as a gelling agent, depending on the relative amounts and the specific conditions of use. The mixture could exhibit new or unexpected properties, such as changes in viscosity, texture, or color, that could affect its suitability for certain applications. In the context of using SAP and agar to absorb and release water, it is possible to consider the material to be rechargeable and dischargeable. SAP is a superabsorbent polymer that can absorb and retain water, while agar is a natural gelling agent that can create a gel-like substance when combined with water. When combined, the two can create a material that can absorb water and form a gel-like substance, and then release the water when the gel is exposed to external pressure or other physical stimuli. To recharge the material, it would simply need to be exposed to water again, which would be absorbed by the SAP component. When the material is needed to discharge the water, external pressure or other physical stimuli can be applied to the gel, causing it to release the water it absorbed. It is important to note that the effectiveness of this rechargeable and dischargeable mechanism will depend on the specific properties of the SAP and agar used, as well as the design of the material. Additionally, the amount of water that can be absorbed and released may be limited by the capacity of the material and the conditions under which it is used.

The research is Depended on the trails and variation of mix by keeping the below points in mind

Concentration of components The concentration of each component can affect the degree of crosslinking and the final properties of the material. Typically, a higher concentration of crosslinkers such as PEG-diacrylate and a lower concentration of SAP will lead to a more highly crosslinked material.

Type and Concentration of Initiator The type and concentration of initiator can affect the reaction rate and degree of crosslinking. For example, photo initiators can be used to initiate the reaction under UV light, while chemical initiators can be used for room-temperature reactions.

Reaction time and Temperature The reaction time and temperature can also affect the degree of crosslinking and the final properties of the material. Longer reaction times and higher temperatures may lead to more highly crosslinked materials.

Post-Reaction Treatments Washing or drying the material after the reaction can help to remove any unreacted components or impurities and can affect the final properties of the material.