

Save Wood-Save Earth:-

Wood can't be manufactured synthetically; it is rare, precious, Eco-friendly & amazing gift of Nature.

Composition of Wood:-

Wood is composed of minute, hollow fibers. Some wood is composed of short, hollow brick shaped cells. Zone of lighter wood is called **Sapwood** & of darker wood is called **Heartwood**. Through the fibers Tree transports water and nutrients vertically within. Wood is composed of a complex mixture of substances but the main constituent of all wood is a complex sugar called **Cellulose**.

Limitations of wood:-

Wood may be destroyed and damaged by fungi, insects and Borers. Under proper treatment, wood can give centuries of good service. Under unfavorable conditions wood can be crushed in powder. Wood is affected by environment factors such as temperature, moisture, winds, salty air, water etc

Wood Enemies:-

Water, moisture, wind, salts, chemicals, Wood-inhabiting fungi-feed on living or dead wood and produce spores (microscopic seeds). Spores can infect moist wood, Fungi need favorable temperature and moisture content. Types of fungi- wood decay fungi, Sap staining fungi. Decay fungi grows in interiors of wood, Fungi break down the cellulose component of wood.

Wood Decay Fungi Types & its Effects:- Brown rots, White rots, Soft rots Causes Excessive wood shrinkage, Cross grain cracking & Powder.

Insects:- Termites, carpenter ants and beetles

Beetles:- Powder post Beetles, Anobiid Beetles Bostrichid Borers, Carpenter Ants Round headed and flat headed beetles, Marine Borers.

Wood-Destroying Insects:-

- Termites:-** This group of insects is responsible for destruction of wood, because they feed on wood; the major types are subterranean termites and dry wood termites.
- Beetles:-** This group is next in economic importance; insects in this group mainly attack stressed or recently felled trees; only few of them seriously attack wood in use, such as powder-post beetles. Bark beetles attack and kill stressed trees by girdling the inner bark; they bring in staining fungi and cause blue stain of the wood.
- Carpenter Ants:-** They do not feed on wood, only nest in wood. They make nests by carving out decayed or partially decay wood to build the colonies.
- Carpenter Bees:-** They also do not feed on wood; usually nest in dead branches.

Why Wood Preservation:-

- To overcome Environmental effects and insect control.
- To increase life span of wood.
- To preserve and protect wood.
- To maintains natural resources of wood.

Wood Preservation:-

Wood preservation is the process of preserving wood from the wood destroying agents like insects or fungus so that the life span of the wood can be extended. It refers to the treatment of wood with chemicals to impart resistance to degradation and deterioration by living organisms. The proper application of chemical preservatives can protect wood from decay, and stain fungi, insects and marine borers, thus prolonging the service life of wood for many years.

Requirement of Wood Preservation:-

The wood contents celluloses, hemicelluloses, starches and other susceptible materials that attract the fungi and insects to be degraded and eaten. After the preservative treatments, the fungi and insects cannot decompose and feed on these substances, hence the durability of wood is to be increased.

Types of Wood Preservation:- Vacuum pressure treatment, Mixing with glue, Dipping, Spray application, Brush application & Impregnation.

Types of Wood Preservative:- Solvent base, Creosote-base Water Base- Copper chrome arsenic, Copper chrome boron, Acid cupric chrome, Zinc base, Oxine copper, Copper Naphthenate, Silicates Glycol base.

Characteristics of Wood Preservative:- Toxicity, Broad spectrum, Eco friendly, Fixation capacity, Penetration capacity, Retention capacity, Distribution in the wood, Availability, Economical.

Wood Protector SCAPO® Product Ranges:-

- Wood Protector SCAPO® GLP
- Color Wood Protector SCAPO® - C
- SF Wood Protector SCAPO® - G
- Wood Protector SCAPO® - S

Wood Protector SCAPO® GLP and Color Wood Protector SCAPO® - C is an ideal Wood Preservative which can be used both internally & externally (during mfg. of engineered wood, viz. Plywood, Block-Board, Flush Doors of all grades as well as wood Coating), which gives WOOD the best ever protection from **Wood Enemies** (Borer-Marine, Termite, Fungus and other micro-Organism).

The application of organic preservative is limited due to their high price, single spectrum, low solubility, leach ability, high toxic to human life & not easy to handle during plywood production, That's why the need of an eco-friendly wood preservative is required to meet the demand for plywood industries so that it would be **less toxic to human being & more toxic to wood destroying organism**.

Wood Protector is a totally an Eco-Friendly product based on Natural Plants/Herbs, plenty available in our country, that is why it is very **user-friendly & more effective** compare to contemporary organic and others which are purely chemical.

The Poly-Phenolic group extracted from natural Herbs gives extra bonding properties to synthetic resin, results better GSS in dry & wet

both, testing provided in Mycological test as per IS-1734, used for the Plywood Industries.

Product Description:-

Appearance (550 cps at 30°C)	Deep brown viscous liquid
Density	0.943-0.968
pH	6-6.8
Odour	Pungent
Packaging	20 Kg Virgin Plastic Jar
Moisture % by weight	1
Temp & pH degradation limit	180-220°C at 12

Advantages:-

- Ready to use – anywhere, any portion of any type of wood of any type of application-indoor/outdoor.
- Proper penetration & retention by Wood species.
- Non-leachable & No toxic to human means safe to handle-(i.e. no irritation in hands, no fumes in eyes & no smoke in hot press)
- Toxic to wide range of wood enemies. (Termite, Borer, Fungus etc.)
- Increase the life of Wood Panels.
- High degree of permanence.
- Non-corrosive to metal, Neoprene Doctor Roller.
- Economical.
- Provide better GSS results in Mycological tests.
- Best solution for using as GLP in Plywood industry.

Wood Protector does not contain any synthetic insecticide. Materials used this formulations are not covered under the schedule of insecticides Act 1968; hence no license is required from any organization for storage as well as for trading.

Thermal degradation study

From the DSC-TGA data plotted weight (%) vs temperature (°C) of the Wood protector SCAPO® added 1.5% in PF resin, shows that the loss of mass occurs about 300°C. Hence, thermal degradation study of the preservative sample signifies that on heating the preservative molecule had not lost its (his) original properties. (Ref Fig 2 and Fig 3).

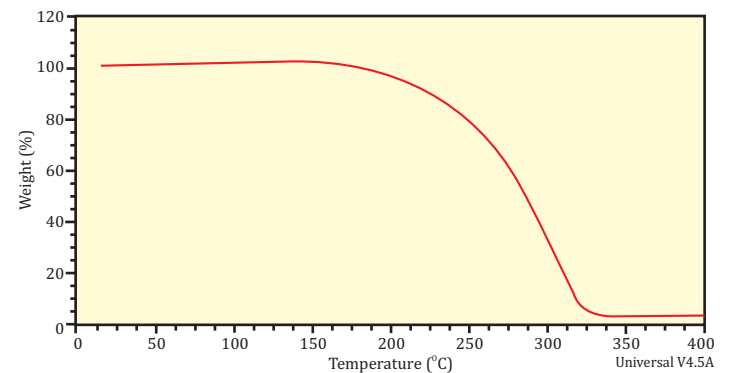


Fig A : Thermal degradation study of Wood protector SCAPO® sample.

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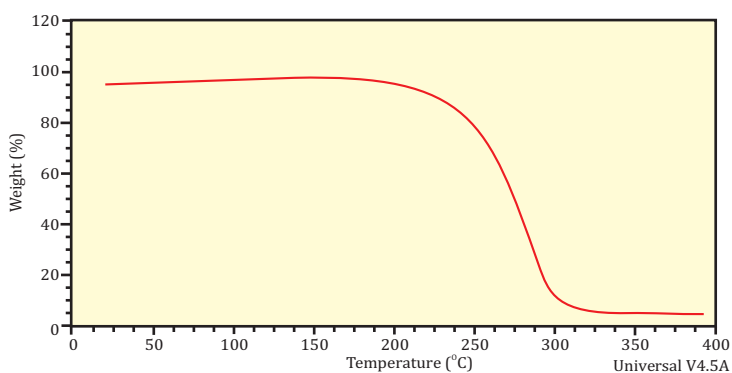


Fig B : Thermal degradation study of Wood protector SCAPO® sample.

Efficacy test against Termites after 36 months of Exposure As per IS : 4833:1993 (IPIRTI)

Concentration, %	Numerical ratings	Condition of samples
0.0	3.0	Heavy attack, termite attack area is more than 50% of surface area.
0.5	2.0	Moderate attack, termite attack area between 35% to 30% of surface area.
1.0	2.0	Moderate attack, termite attack area between 35% to 40% of surface area.
1.5	1.0	Moderate attack, termite attack area between 20% to 30% of surface area.
2.0	1.0	Moderate attack, termite attack area between 20% to 30% of surface area.
3.0	0.5	Moderate attack, termite attack area between 20% to 30% of surface area.

Plywood samples treated with Wood Protector SCAPO® for Borer (Powder Post Beetle) Attack

Preservative Concentration, %	06 months	12 months	18 months	24 months	36 months	Remarks
0.5	No attack	No attack	No attack	attacked	attacked	
1.0	No attack	No attack	No attack	No attack	attacked	
1.5	No attack	No attack	No attack	No attack	No attack	
2.0	No attack	No attack	No attack	No attack	No attack	
3.0	No attack	No attack	No attack	No attack	No attack	
Control Sample	Attacked	Attacked	Severe Attack	Severe Attack	Severe Attack	

Efficacy test against Borer after 36 months of Exposure IS : (4873(Part-II) : 2008 (IPIRTI)

Preservative Concentration, %	Damage
0.0	Exit holes present
0.5	Exit holes present
1.0	Exit holes absent
1.5	Exit holes absent
2.0	Exit holes absent

SF Wood Protector SCAPO® - G

The application of GLP limits to its glue line area of the engineered panels only, however the side edges which aren't treated by any means remains bare protected and hence the most favorable attacking zones for the wood destroying agents.

SF Wood Protector SCAPO® - G is a PU based polymer added with speciality PROTECTION which after application to the thickness side of the Panel, seal the edges with Protective PU layer and doesn't allow the moisture and infestation to enter into as well as keep the edges glossy and smooth, expose the grains clear visible with luster.

WOOD PROTECTOR SCAPO® - S:-

This is an Eco-Friendly Mix for Protection from Fungi and rots for Engineered Wooden Panel in Plywood, Furniture & Toys Industry. The Contemporary mix in the market for protection is hazardous in nature, less effective, leachable and merely for coloring.

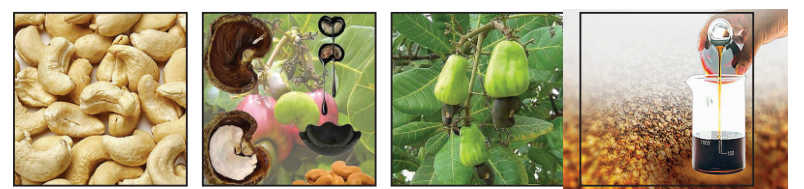
WOOD PROTECTOR SCAPO® - S is a concentrated KALMEGH colorless solution which can be used for dipping Logs/Planks, Veneers and panels (Plywood, Block board & Flush doors) for protection from biological degradable agents.

Active Ingredients in SCAPO® :-

- CNSL (Cashew Nut Shell Liquid):-** Botanical name: Anacardium Occidentale Linn. Family name: Anacardiaceae Common name: Cashew, The cashew nut are naturally Anti-Termite & Anti-Borer.
- Azadirachtin:-** Azadirachtin is derived from the Neem tree, *Azadirachta indica*. It has a very complex structure, being a mixture of related substances extracted from the Neem seed kernels. The seeds are the only source of azadirachtin. Azadirachtin affects insects in many different ways including acting as an insect growth regulator, anti-feedant, repellent, sterilant and oviposition inhibitor.
- Kalmegh:-** *Andrographis Paniculata*, Nees (Family:-Acanthaceae commonly known as King of Bitters in English have strong **insecticidal properties**.
- Karanja:-** *Pongamia Glabra*) Oil is extracted from seeds of Karanja Tree which is commonly found in India. It has insecticidal properties and acts against a number of pests and insects. It has insecticidal properties it is great for agriculture use serving as a natural pest repellent.

SCAPO® WOOD PROTECTOR AN ECO-FRIENDLY GLP TECHNIQUE

Active Ingredients in SCAPO®



CNSL (Cashew Nut Shell Liquid)



Azadirachtin

Kalmegh



Karanja

Tested By IPIRTI
Manufactured & Marketed by



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