PRISMA 2020 for Abstracts Checklist. Table S2

Section and Topic	Item #	Checklist item	Reported (Yes/No)
TITLE			
Title	1	Identify the report as a systematic review.	Yes The title is: "Exploring Advancements in Bio-Based Composites for Thermal Insulation: A Systematic Review." The title identifies the article as a "Systematic Review".
BACKGROUND			
Objectives	2	Provide an explicit statement of the main objective(s) or question(s) the review addresses.	Yes This systematic review consolidates and critically evaluates advancements in bio-composite materials, emphasising their thermal insulation properties and broader applications in sustainable building practices
METHODS			
Eligibility criteria	3	Specify the inclusion and exclusion criteria for the review.	Yes The review focuses on studies published between January and October 2024, sourced from the Scopus database and adhering to PRISMA guidelines
Information sources	4	Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched.	Yes " sourced from the Scopus"
Risk of bias	5	Specify the methods used to assess risk of bias in the included studies.	Yes Methods for assessing bias included examining study design, data collection processes, and potential conflicts of interest, adhering to PRISMA guidelines.
Synthesis of results	6	Specify the methods used to present and synthesise results.	Yes A keyword meta-analysis using VOSviewer (version 1.6.20) illustrates keyword co-occurrence trends.
RESULTS			
Included studies	7	Give the total number of included studies and	Yes

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		participants and summarise relevant characteristics of studies.	Data from 48 studies, analyzing 50 bio-composite materials, show that 44% were optimized for thermal insulation and 40% for sub-structural applications.
Synthesis of results	8	Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured).	Yes No statistical analysis was performed, this is just a paper review.
DISCUSSION			
Limitations of evidence	9	Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision).	Yes "research priorities, particularly in scaling production technologies and enhancing durability testing methods"
Interpretation	10	Provide a general interpretation of the results and important implications.	Yes This review highlights the viability of bio-composites as sustainable alternatives to traditional materials and identifies research priorities, particularly in scaling production technologies and enhancing durability testing methods, to advance their application in sustainable building practices.
OTHER			
Funding	11	Specify the primary source of funding for the review.	No No external funding was received and therefore is not reported
Registration	12	Provide the register name and registration number.	No applicable

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