Supplementary materials

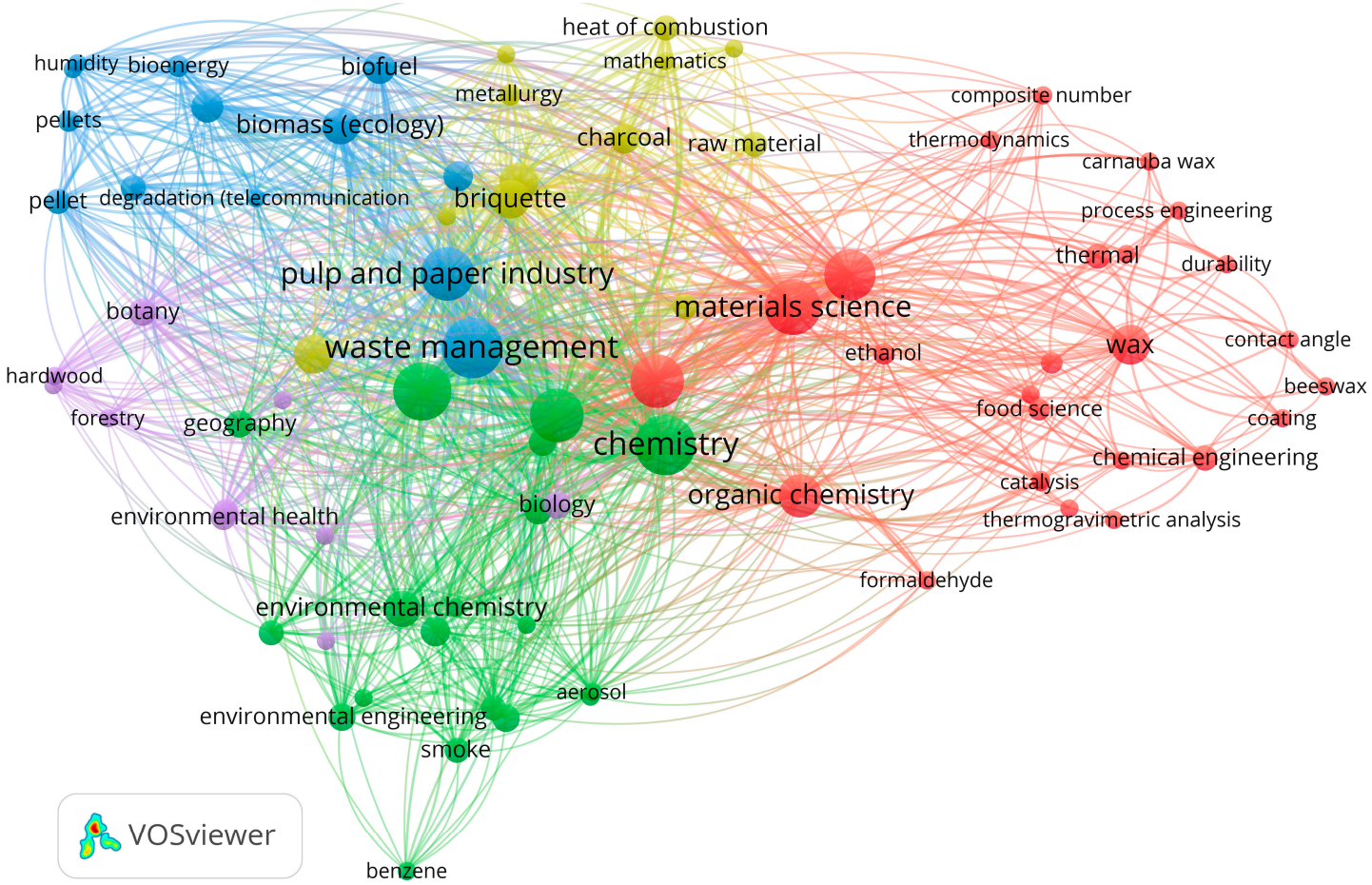


Figure S1. Keyword co-occurrence network of the 42 studies included in the systematic review. Node size indicates keyword frequency, links indicate co-occurrence, and colours indicate thematic clusters.

Table S1. Summary of the 42 studies included in the systematic review.

No.	Study	Evidence level	Product type	Wood species / biomass	Substrate form and dimensions	Coating / binder type and proportion	Experimental conditions	Test method	Measured outcomes	Principal outcome
1	Lin et al. (2023)	Direct	Commercial solid firelighter	Predominantly peat or cellulose; exact botanical substrate of the tested commercial firelighter was not specified (Lin et al., 2023)	One firelighter cube, 0.1 kg; dimensions not reported (Lin et al., 2023)	Kerosene-based; high levels of C9–C12 alkanes; proportion not reported (Lin et al., 2023)	0.1 kg firelighter used to ignite 3.5 kg solid fuel (Lin et al., 2023)	Controlled combustion; ACSM; AE33 aethalometer; ambient source apportionment (Lin et al., 2023)	PM_1, BC, OA, emission factors, ambient BC contribution (Lin et al., 2023)	BC emission factor was approximately 150 mg MJ^{-1}; estimated firelighter contribution to ambient BC during five pollution episodes was 5–58% (Lin et al., 2023).
2	Trubetskaya et al. (2021)	Direct	Commercial solid firelighter	Firelighter substrate/biomass not reported (Trubetskaya et al., 2021)	Commercial firelighter; dimensions not reported (Trubetskaya et al., 2021)	Kerosene-based; proportion not reported (Trubetskaya et al., 2021)	Five main fuels compared in conventional and Ecodesign stoves; dedicated firelighter tests conducted in the conventional stove, including approximately 100 g firelighter (Trubetskaya et al., 2021)	Hot-filter sampling; cooled/diluted aerosol sampling; ACSM; AE33 (Trubetskaya et al., 2021)	PM emission factors, BC, OA, fuel properties (Trubetskaya et al., 2021)	Kerosene-based firelighters made a disproportionately high contribution to particulate emissions during ignition (Trubetskaya et al., 2021).

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3	Bajwa et al. (2016)	Semi-direct	Manufactured firelog	Oak fibre, species not reported; cotton burr with stems	Fibrous material, 250–841 μm; compressed firelogs	Fully refined paraffin; 40 or 50 wt%	Fibre–wax mixtures subjected to different compression conditions and burned in a wood stove	Physical processing tests; stove combustion; gaseous and organic-emission analysis	Density/durability, burn time, temperature, gases, VOCs, PAHs	Composition did not significantly affect burn temperature; combustion samples contained n-alkanes, n-alkenes, oxygenated VOCs, PAHs, benzene derivatives and naphthalene (Bajwa et al., 2016).
4	Andersen et al. (2021)	Indirect	Pillar candles	No wood substrate	Five pillar-candle types; dimensions varied by candle	Paraffin, animal stearin, palm stearin and mixed formulations; compositions varied	Stressed burning produced by fluctuating airflow in a 21.6 m^3 chamber	Online and offline aerosol and gas measurements	BC, $PM_{2.5}$, UFP, PAHs, NO_x, formaldehyde, carbon fractions	Wax and wick composition strongly influenced BC, $PM_{2.5}$ and particle-phase PAHs, but not NO_x, formaldehyde or gas-phase PAHs (Andersen et al., 2021).
5	Glalah et al. (2024)	Semi-direct	Biochar briquette	*Alstonia boonei* sawdust; *Theobroma cacao* pod husk	<2 mm carbonised particles; 50 g mixture pressed in 14.3 × 5 cm mould	Wax, starch or clay; 100 g binder per 600 g biochar	Biomass carbonised at 410 ± 5 °C; briquettes pressed at 9 MPa for 60 s	Physical/mechanical tests; proximate analysis; bomb calorimetry; water-boiling test; CO and $PM_{2.5}$ measurement	Moisture, density, water resistance, durability, ash, volatile matter, fixed carbon, calorific value, burn rate, CO, $PM_{2.5}$	*A. boonei* sawdust/wax briquettes had 76.76% water-resistance capacity and 0.67 ppm CO (Glalah et al., 2024).

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6	Boekaerts et al. (2021)	Indirect	Wax-emulsion material	No firelighter substrate; wax-emulsion applications included wood-composite use	Wax/emulsion system; no firelighter geometry	Bio-based ketone waxes from fatty feedstocks; fossil paraffin comparator	Multiple feedstocks and production/life-cycle scenarios	Wax/material characterisation and comparative life-cycle assessment	Wax performance and climate-change impacts	Bio-based ketone-wax scenarios produced carbon footprints both below and above fossil paraffin depending on feedstock and modelled scenario (Boekaerts et al., 2021).
7	Li et al. (2020)	Semi-direct	Beeswax-impregnated wood	African padauk (*Pterocarpus soyauxii*)	Solid-wood cubes, 20 × 20 × 20 mm	Beeswax; fixed loading not specified, uptake measured after treatment	Beeswax treatment at 120 °C for 3 or 6 h	Weight-gain and swelling tests; contact angle; SEM; thermal analysis; FTIR	Wax uptake, dimensional stability, hydrophobicity, surface morphology, thermal behaviour	Beeswax treatment improved dimensional stability and markedly increased surface hydrophobicity (Li et al., 2020).
8	Bak (2025)	Semi-direct	Paraffin-impregnated thermally modified wood	European beech (*Fagus sylvatica*); Scots pine (*Pinus sylvestris*)	Sapwood laths, 25 × 50 × 350 mm	Paraffin wax; fixed loading not prescribed, wax uptake measured	Combined thermal modification and wax impregnation at 180 and 200 °C	Wax-uptake, moisture, swelling, wettability, mechanical and decay-resistance tests	Wax uptake, EMC, swelling, contact angle, density, strength, durability	Wax uptake depended strongly on treatment temperature; combined treatment reduced hygroscopicity and improved dimensional stability (Bak, 2025).
9	Juang et al. (2024)	Direct	Solid fire starter	Sawdust, pine cones and dry leaves; species not reported	Crushed/pounded biomass; final starter dimensions not reported	Stearic acid; biomass:stearic acid 3:8, 2:7 and 1:6, corresponding to 12:32, 8:28 and 4:24 g	Biomass dried at 120 °C for 4 × 10 min; mixed with molten stearic acid; hardened ≈2 h at room temperature	Stopwatch ignition/burn tests; mass-loss calculation; flame-height measurement; 2 m drop test	Ignition time, burn duration, burn rate, flame height, combustion residue, durability	Fastest ignition was 17 s for dry leaves at 3:8; longest burn was 1423 s for sawdust at 2:7; all formulations had 100% drop-test durability (Juang et al., 2024).

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10	Ezéchiel et al. (2023)	Direct	Ecological solid fire starter	Sawdust; wood species not reported	Sawdust sieved through a 5 mm mesh; approximately 4 × 4 × 1 cm; 10 g starter	Refined palm, cottonseed or peanut oil; oil content varied among formulations; gum arabic used in preparation	Sawdust/oil formulations mixed, formed and dried before testing	Bomb calorimetry; physical, burning and durability tests	LHV, density, durability, combustion behaviour, flame characteristics	Lower heating value ranged from 25.127 ± 0.026 to 31.914 ± 0.810 MJ kg^{-1} across formulations (Ezéchiel et al., 2023).
11	Fei et al. (2020)	Indirect	Bulk coating wax	No wood substrate	Wax discs, 40 mm diameter × 25 mm height	Paraffin, beeswax, fully hydrogenated soybean oil, hydrogenated castor oil, EGMD and Estercoat	5, 10 and 15 N loads; 1, 5 and 10 rad s^{-1}; 0, 25 and 50 °C	Tribo-rheometry; microscopy; DSC	Coefficient of friction, wear loss, crystal morphology, crystallinity	Friction and wear depended on wax type and test conditions; increased load, velocity and temperature generally increased wear (Fei et al., 2020).
12	Brychka et al. (2024)	Indirect	Wax/nanoclay PCM composite	No wood substrate	Bulk carnauba-wax/montmorillonite composite; dimensions not reported	Carnauba wax 50, 60 or 70 wt%	Form-stable composite preparation and thermal cycling	TEM; IR; solid-state NMR; XRD; thermal-conductivity and latent-heat measurements	Thermal conductivity, leakage, latent heat, structure	Montmorillonite prevented molten-wax leakage and increased thermal conductivity; latent heat increased from 69.5 to 107.9 J g^{-1} as wax fraction increased from 50 to 70% (Brychka et al., 2024).

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13	Bartali et al. (2023)	Indirect	Carnauba-wax PCM	No wood substrate	Carnauba wax packaged in polyethylene bags inside an evacuated-tube collector	Carnauba wax; 4 or 9 kg	Outdoor solar irradiation and shading tests	Collector thermal-performance measurements	Phase-change heat storage and outlet-water temperature	With 9 kg carnauba wax, outlet-water temperature remained around 65 °C for 30 min under shading conditions (Bartali et al., 2023).
14	Palacios et al. (2018)	Indirect	Bulk organic PCM	No wood substrate	Bulk PCM specimens	Paraffin RT-21; capric/myristic and capric/palmitic fatty-acid mixtures; several flame retardants, including 50 wt% hydromagnesite or $Mg(OH)_2$ treatments	PCM/flame-retardant formulations tested in bulk form	TGA; DSC; pyrolysis combustion flow calorimetry; dripping/fire test	Thermal decomposition, heat release, ignition/extinction behaviour, melting enthalpy	Hydromagnesite and $Mg(OH)_2$ at 50 wt% improved fire retardancy of the tested fatty-acid mixtures while altering thermal-storage properties (Palacios et al., 2018).
15	Bachmaier et al. (2021)	Indirect	Wood-combustion ash	Untreated woody biofuels; individual species not consistently reported	Bottom and cyclone ash; no lignocellulosic test geometry	No coating/binder	50 ash samples from 17 Bavarian plants and one ash depot	Chemical nutrient and pollutant analysis; comparison with German fertilizer limits	K, Ca, P, Cr(VI), Cd, Pb, Zn and other elements	About 30% of bottom ashes directly met the assessed heavy-metal limits; cyclone ashes contained comparatively high Cd, Pb and Zn (Bachmaier et al., 2021).

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16	Cutz et al. (2021)	Indirect	Biomass pellets	Wood species not reported	Two untreated wood-pellet types and one torrefied pellet type; dimensions not specified as a fire-starter geometry	No coating/binder	One month at 40 °C and 85% RH	Digital microscopy; SEM-EDS; micro-CT; mass/dimensional measurements	Weight gain, cracks, porosity, inclusions, structural degradation	One month at 40 °C/85% RH caused substantial pellet degradation, including increased porosity, moisture uptake and crack development (Cutz et al., 2021).
17	Dietenberger & Hasburgh (2016)	Indirect	Wood and wood products	Multiple species	Multiple solid-wood/product forms; no single specimen geometry	No coating/binder	Multiple heating and fire conditions synthesised from published studies	Reference-module literature synthesis	Thermal degradation, ignition, HRR, charring, fire resistance, flame spread	Wood thermal degradation depends on temperature and exposure duration as well as moisture, species, treatment and heating conditions (Dietenberger & Hasburgh, 2016).
18	Falemara et al. (2018)	Semi-direct	Biomass briquette	*Anogeissus leiocarpus* sawdust; groundnut shells; corn cobs	Ground biomass and mixed briquettes; finished dimensions not reported	Starch binder at 15, 20 or 25%	Six biomass compositions tested at three starch proportions, 18 treatments total	Physical and proximate-property testing; combustion-energy measurements	Density, volatile matter, ash, fixed carbon, specific heat of combustion	Biomass composition and starch proportion affected physical and combustion properties of the briquettes (Falemara et al., 2018).

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19	Liu et al. (2022)	Semi-direct	Wax-coated paper	Cellulosic paper; wood species not reported	Packaging paper; coating applied by area	Microcrystalline-wax emulsion; Span-80/Tween-80 = 5:5; emulsifier 20% relative to wax; coating load varied	Wax emulsion prepared by mechanical stirring/homogenisation and applied to untreated or starch-pretreated paper	Contact-angle, $Cobb_{60}$, kit-rating, water-vapour permeability and migration tests	Oil resistance, water resistance, WVP, migration	At 6 g m^{-2} wax loading on starch-pretreated paper, $Cobb_{60}$ was 12.5 g m^{-2} and WVP decreased by 81.9% (Liu et al., 2022).
20	Price-Allison et al. (2019)	Indirect	Fuelwood combustion	Beech hardwood and spruce softwood; scientific species names not reported	Bark-free logs, approximately 25 × 7 cm	No coating; 100 g kerosene-based firelighter used for stove ignition	Fresh >40% MC, seasoned 25–35% MC and kiln-dried <20% MC wood burned in a residential stove	Oven/probe moisture measurement; stove tests; FTIR gases; gravimetric PM; particle sizing; EC/TC	Burning rate, gaseous emissions, PM, EC/TC	Increasing wood moisture altered burning rate and increased particulate emissions; NO_x depended mainly on fuel nitrogen rather than moisture (Price-Allison et al., 2019).
21	Wzorek et al. (2024)	Indirect	Biomass pellets	Pine sawdust; sunflower husk; wheat straw; hemp hurd	Agro-pellets Ø6–8 mm; industrial pine-sawdust pellets as comparator	No coating/binder reported	30 °C/90% RH until saturation; 40 freeze–thaw cycles between −10 and +10 °C	EN ISO durability test; drop test; bomb calorimetry; CHNS; SEM-EDS; EN 12457-4 leaching/ICP-OES	Moisture, durability, strength, HHV/LHV, elemental composition, heavy-metal leaching	Agro-biomass pellets absorbed more moisture and degraded more than pine pellets; increased moisture reduced LHV (Wzorek et al., 2024).

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22	Derudi et al. (2012)	Indirect	Scented and comparison paraffin candles	No wood substrate (Derudi et al., 2012)	Five scented candle types, approximately 150 g and burned without containers; three comparison paraffin candles, approximately 100 g and burned in glass beakers (Derudi et al., 2012)	Commercial scented candles containing approximately 2 wt% fragrance and 30 mg dye; three commercially available paraffins used for comparison candles; cotton wicks (Derudi et al., 2012)	Four candles per run; airflow 10–15 normal L min^{-1}; approximately 15 min stabilisation before sampling (Derudi et al., 2012)	DNPH sampling/HPLC for aldehydes; GC-MS for BTEX and gas- and particle-phase PAHs (Derudi et al., 2012)	BTEX, PAHs and aldehydes (Derudi et al., 2012)	BTEX and PAH emission factors varied among the candles and paraffins; aldehyde emissions from scented candles were associated with additives (Derudi et al., 2012).
23	Humar et al. (2017)	Semi-direct	Wax-impregnated thermally modified wood	Norway spruce (*Picea abies*)	Norway spruce specimens	Natural-wax suspension; applied by dipping impregnation (DipI) or vacuum-pressure impregnation (VPI)	Wax-treated specimens thermally modified at 185, 200, 215 or 230 °C; control specimens heated to 100 °C (Humar et al., 2017)	Contact-angle measurement; short- and long-term water-uptake tests; bending-strength testing; fungal-decay testing	Contact angle, liquid-water uptake, water-vapour uptake, bending strength, resistance to wood-decay fungi	Combined wax treatment and thermal modification increased hydrophobicity, reduced liquid-water uptake, slowed water-vapour uptake and improved resistance to fungal decay (Humar et al., 2017).

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24	Jiang et al. (2010)	Indirect	Urea-formaldehyde resin residue	No lignocellulosic test substrate	UFR residue dried at 105 °C for 3 h and pulverised to <0.2 mm; approximately 10 mg used for analysis	Urea-formaldehyde resin residue; no wax	TG-FTIR pyrolysis and combustion experiments; pyrolysis/combustion TG profiles evaluated with increasing temperature	Thermogravimetric analysis coupled with Fourier-transform infrared spectroscopy	Mass loss and evolved CO_2, HNCO, NH_3, HCN, CO and H_2O	During pyrolysis, 74 wt% of the original mass was lost between 195 and 430 °C. CO_2, HNCO, NH_3, HCN and CO were detected. Combustion was nearly complete at 600 °C, with CO_2 and water identified as the principal high-temperature gaseous products (Jiang et al., 2010).
25	Mohammad Firman et al. (2023)	Semi-direct	Shape-stabilised paper briquette	New copier paper, A4, 80 gsm; cellulose-based paper (Mohammad Firman et al., 2023)	Paper shredded to <5 mm²; final briquette mass 13 g (Mohammad Firman et al., 2023)	Paraffin wax as hydrophobic binder; 10–50 wt% wax at 10 wt% intervals (Mohammad Firman et al., 2023)	Paper dried at 40 °C for 1 h; briquetting at 100, 125 or 150 kN with 5 min holding time; 720 h storage under indoor, condensation and neutral salt-spray conditions (Mohammad Firman et al., 2023)	Dimensional and density measurements; ASTM D5865 GCV; ASTM D2013 moisture; ASTM D5142 ash; ISO 17831-2 mechanical durability; compressive-strength testing (Mohammad Firman et al., 2023)	Dimensions, density, GCV, moisture, ash, mechanical durability, compressive strength and storage stability (Mohammad Firman et al., 2023)	Maximum moisture-content increase was 35.44 percentage points for the paper briquette and 5.1 percentage points for SSPB; SSPB mechanical durability reached 97%, compared with 82% for the paper briquette (Mohammad Firman et al., 2023).

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26	Liepiņš & Liepiņš (2017)	Indirect	Stemwood property study	Scots pine (*Pinus sylvestris*), Norway spruce (*Picea abies*), birch spp., mainly silver birch (*Betula pendula*)	Stemwood discs sampled along stems	None	102 pine, 81 spruce and 105 birch stems from Latvian forests	Basic-density determination and modelling along stem height	Basic density, axial density variation	Mean basic stemwood density differed among species and showed stronger axial variation in pine and birch than spruce (Liepiņš & Liepiņš, 2017).
27	Pazalja et al. (2021)	Indirect	Wood-pellet ash	Ten commercial pellet brands; wood species/composition varied	Combustion ash	None	Pellet ashes from Bosnia and Herzegovina and Italy; wet digestion with HNO_3	Gravimetric ash determination; flame/graphite-furnace AAS; pollution and health-risk indices	Heavy metals, ash content, soil-contamination and health-risk indices	Metal concentrations varied substantially; calculated enrichment and pollution indices indicated potential soil-contamination concerns for ash disposal (Pazalja et al., 2021).
28	Price-Allison et al. (2023)	Indirect	Fuelwood	European beech, *Fagus sylvatica* L.	Bark removed; logs approximately 225 mm long × 80 mm diameter	None	Batches with different moisture contents burned under matched stove conditions	Gas analysis, gravimetric and size-resolved PM sampling, chemical/optical/TGA particle characterisation	PM quantity, particle size/composition/morphology, gaseous pollutants	Wood moisture affected both the quantity and characteristics of emitted particulate matter under otherwise matched combustion conditions (Price-Allison et al., 2023).

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29	Hamdan et al. (2026)	Direct	Coffee-waste fire starter	Coffee waste, shredded paper and sawdust; wood species not reported (Hamdan et al., 2026)	Pressed fire starters of varied thickness and compactness; exact dimensions not stated in the abstract (Hamdan et al., 2026)	Binder/coating type and proportion not stated in the abstract (Hamdan et al., 2026)	Pressing followed by controlled oven drying; thickness, mixture mass/compactness and drying conditions varied (Hamdan et al., 2026)	Machine/process evaluation; drying and combustion-performance assessment described in the abstract (Hamdan et al., 2026)	Drying rate, moisture content, cracking, structural integrity, ignition and burning behaviour (Hamdan et al., 2026)	Reduced thickness and suitable compactness improved drying rate, reduced cracking and improved structural integrity; oven drying lowered moisture content and produced better ignition and more consistent burning (Hamdan et al., 2026).
30	Bejenari et al. (2025)	Direct	Fire-starting briquettes	Spent coffee grounds; paper pulp in some formulations (Bejenari et al., 2025)	Fire-starting briquettes; seven formulation series (Bejenari et al., 2025)	Soy wax, beeswax and paraffin individually or in combinations; formulations contained 39–60% spent coffee grounds and 10–25% 70% alcohol; S3/1 contained 44.41% spent coffee grounds, 21.06% soy wax, 19.78% beeswax and 14.75% alcohol (Bejenari et al., 2025)	Alcohol-soaked spent coffee grounds mixed with molten wax and homogenised in a water bath; fireplace combustion tests followed by MCC, TGA and SEM-EDX analyses of selected formulations (Bejenari et al., 2025)	Fireplace burning tests; MCC according to ASTM D7309-13 Method A; TGA/DTG/DTA in air; SEM-EDX (Bejenari et al., 2025)	Ignition rate, flame intensity, burning duration, THR, HRC, HRR, PHRR, TPHRR, MCC residue, ash, thermal decomposition, morphology and elemental composition (Bejenari et al., 2025)	Burning duration ranged from 300 to 360 s. S3/1 was identified as the optimal formulation, with THR of 27.49 kJ g^{-1}, HRC of 413.71 J (g K)$^{-1}$, MCC residue of 9.86% and 2% ash (Bejenari et al., 2025).

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31	van Zoonen et al. (2024)	Indirect	Bioethanol ignition/burn accidents	No lignocellulosic substrate	Liquid bioethanol products/burners	Bioethanol	Fourteen patients previously admitted with non-intentional bioethanol burn injuries were interviewed	Semi-structured interviews; independent coding by two researchers	Accident mechanisms, knowledge, risk perception, behaviour	Bioethanol was often used as an ignition accelerant; lack of product knowledge and risk underestimation were recurring accident factors (van Zoonen et al., 2024).
32	Cséfalvay & Kovács (2024)	Indirect	Liquid lighter fuels	No lignocellulosic substrate	Commercial and candidate liquid fuels	Four fossil lighter fluids versus GVL, ethyl levulinate, ethanol, n-butanol and GVL/ethanol or EL/ethanol mixtures	Physicochemical properties measured or compiled; evaporation tests at controlled temperatures	Flash point, boiling point, density, vapour pressure, HHV/LHV, evaporation and multicriteria analysis	Safety, volatility, toxicity, energy properties, environmental indicator	Biomass-based candidates differed substantially from commercial lighter fluids; the study explicitly states that ignition, combustion and flue-gas testing remain necessary for practical use (Cséfalvay & Kovács, 2024).
33	Ajayeoba et al. (2022)	Direct	Charcoal ignition aids	Paper, nylon, rubber, plastic, petrol, palm-oil residue, maize cob, wood and kerosene	Various ignition-aid materials	None	Ignition aids burned with charcoal under comparative combustion testing	Gas/emission measurements plus user survey	CO, VOC and other combustion indices	Paper produced the lowest reported CO value, 28.1 ppm, while all tested ignition aids produced VOC concentrations above the reference value used by the authors (Ajayeoba et al., 2022).

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34	Fedak et al. (2019)	Indirect	Cookstove startup materials	Biomass types included kindling, agricultural residues and resin-rich wood	Multiple startup materials reported by experts	Waxes, kerosene and other petroleum accelerants among reported materials	23 expert respondents covering 48 locations in 22 countries according to the abstract/highlights; the Results section states 49 locations in 22 countries	Structured expert-elicitation survey	Startup-material type and frequency	More than 40 unique startup materials were reported. Paper, plastic, agricultural wastes, waxes and other petroleum fuels such as kerosene, and rubber-like materials were among the most commonly indicated categories (Fedak et al., 2019).
35	Lask & Gadgil (2017)	Direct	Charcoal-stove ignition aid	Charcoal; high-resin pine used as the initial kindling	Metal lighting cone placed over the charcoal bed	None	Traditional Haitian charcoal stove tested with and without the lighting cone	Ignition-time, fuel-consumption and emissions measurements	Ignition time, charcoal consumption, CO and particulate emissions	Mean charcoal ignition time decreased from 414 to 193 s. Charcoal consumption during ignition decreased by more than 40%, and CO emissions decreased by more than 50% when the cone was used (Lask & Gadgil, 2017).

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36	Fábos et al. (2015)	Direct	Liquid lighter fluid	Charcoal as target fuel	Liquid lighter-fluid formulations	GVL alone and GVL/ethanol blends, including 95:5 and 90:10 vol%	Charcoal ignition tests combined with emission analysis	Ignition-time and VOC-emission testing	Ignition time, VOC emissions, usability as illuminating/lighter fluid	Adding 10 vol% ethanol shortened ignition to a few seconds and reduced relative VOC emissions by 15% versus the commercial lighter-fluid comparator (Fábos et al., 2015).
37	Himbane et al. (2022)	Semi-direct	Peanut-shell biochar briquette	Peanut shells (Himbane et al., 2022)	Ellipsoidal briquettes of 7 or 31 cm^3; approximately 12 or 40 g, respectively (Himbane et al., 2022)	Wheat flour containing approximately 70% starch; binder rate 6 or 10% on a dry basis (Himbane et al., 2022)	2^3 factorial design with binder rate 6/10%, pyrolysis temperature 400/800 °C and briquette volume 7/31 cm^3; compacted at 80 kN and dried at 105 °C for 24 h; combustion tested in a Jambar stove (Himbane et al., 2022)	Proximate and elemental analysis; calorific-value determination; hood-based CO and $PM_{2.5}$ sampling; thermal-efficiency testing (Himbane et al., 2022)	Moisture, volatile matter, ash, fixed carbon, C, H, N, O, HHV, LHV, CO emission factor, $PM_{2.5}$ emission factor and thermal efficiency (Himbane et al., 2022)	Briquette volume significantly affected CO emission factor, while binder rate significantly affected $PM_{2.5}$ emission factor. All three investigated factors significantly affected thermal efficiency. LHV ranged from 24.35 to 26.55 MJ kg^{-1} (Himbane et al., 2022).
38	Mitchell et al. (2020)	Semi-direct	Domestic-heating briquettes/logs	Wood logs, wood briquettes, straw-type residues, bagasse and Miscanthus	Commercial/experimental briquettes and logs	No wax coating	Fuels burned in a 5 kW domestic stove	Fuel analysis plus gaseous and particulate emission measurements	PM, NO_x, HCl, SO_2, fuel-N, volatile matter and combustion behaviour	Optimised biomass briquettes could emit less PM than wood logs; fuel composition and briquette manufacture both affected emissions (Mitchell et al., 2020).

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39	Fachinger et al. (2017)	Indirect	Residential wood/pellet stove fuels	11 hardwood species and 4 softwood groups plus briquettes and non-woody fuels	Logs, pellets, briquettes, wood chips and herbaceous fuels	None	Ideal and non-ideal burn conditions including under-/overload, dried/small logs, bark and excess air	Continuous particle-composition and gaseous-emission measurement	Particle number/mass/composition, BC and emission factors	Burning conditions had a stronger effect than wood species; several non-ideal operating conditions increased particulate emission factors substantially (Fachinger et al., 2017).
40	Mencarelli et al. (2023)	Indirect	Charcoal-based combustion	Charcoal products	Charcoal fuels used in domestic/restaurant grilling	No wax coating	Review of charcoal-combustion literature	Literature synthesis	CO, CO_2, NO_x, PM, PAHs, VOCs, trace metals	Charcoal combustion studies report multiple gaseous and particulate pollutants, with emissions affected by charcoal type, combustion conditions and food loading (Mencarelli et al., 2023).
41	Rezania et al. (2016)	Semi-direct	Biomass briquette	Water hyacinth (*Eichhornia crassipes*) and oil-palm empty fruit bunch	Mixed biomass briquettes	Cassava-starch binder; WH:EFB proportion varied	WH proportion varied from 25 to 100 wt% in mixed briquettes followed by combustion/flue-gas testing	Proximate/fuel-property analysis and combustion gas measurement	Moisture, ash, fixed carbon, volatile matter, calorific value, O_2, CO, CO_2, NO/NO_2, SO_2	Increasing water-hyacinth proportion increased moisture, ash and fixed carbon while decreasing volatile matter and calorific value; 25% WH/75% EFB was identified as the preferred mixture (Rezania et al., 2016).

No.	Study	Evidence level	Product type	Wood species / biomass	Substrate form and dimensions	Coating / binder type and proportion	Experimental conditions	Test method	Measured outcomes	Principal outcome
42	Singh et al. (2023)	Indirect	Wood-smoke particulate matter	Oak, cherry and mesquite hardwoods	Wood combustion; no fire-starter geometry	None	Flaming combustion for all three species; oak additionally under smouldering and incomplete combustion	Integrated aerosol/off-gas, elemental, organic-chemical and toxicological analyses	$PM_{0.1}$ number/mass, CO, VOCs, elemental/organic composition, cellular response	Combustion condition affected emission profiles more strongly than wood species; flaming $PM_{0.1}$ from all three hardwoods activated the SPDEF biomarker (Singh et al., 2023).

Table S2. Reported material, performance and environmental evidence for the reviewed wax and wax-related materials.

Parameter	Paraffin wax	Beeswax	Stearin and stearic–palmitic fatty-acid materials	Candle-wax formulations
Origin	Petroleum-derived [9,17]	Honeybee-derived from honeycombs [63,64]	Palm-derived and animal-derived stearin documented for fire-lighting products [66] Animal and palm stearin tested in candles [22]	Fully refined paraffin, animal stearin, palm stearin and blends [22,23]
Wax fraction	30–60% petroleum slack wax, wood-wool firelighter [9] 40–50% paraffin, fire logs [14] >60% paraffin, Pental firelighter [60]	Commercial firelighter: 10% beeswax + 50% soy wax [10] Beeswax-only and soy–beeswax fire-starting briquettes tested [28]	Biomass:stearic acid 3:8 [11] 2:7 [11] 1:6 [11] Ácido Esteárico 18-60: 60–67% stearic acid; 28–34% palmitic acid [70]	75:25 paraffin–palm-stearin blend [22] Separate animal-stearin, palm-stearin and paraffin formulations [22] Commercial coloured/scented candles and pure paraffins [23]
Melting point	Petroleum slack wax: 49–63 °C [9] Parvan 1540 paraffin: 67.2 °C [14]	62–65 °C [63] 62–64 °C [64]	Ácido Esteárico 18-60: titre 58–61 °C [70] Related shea-derived solid fraction: 34.3 °C slip melting; 38.5 °C complete melting [67]	Formulation-specific measurement gap in [22,23] Related petroleum slack-wax benchmark: 49–63 °C [9]
Moisture resistance	Paraffin-stabilised briquette: moisture increase 5.10 vs. 35.44 percentage points after 720 h [16] Wax-bound sawdust briquette: 76.76% water resistance; 1.7% moisture [15] Microcrystalline-wax coating: 81.9% lower water-vapour permeability; $Cobb_{60}$ 12.5 g m^{-2} [50]	Tangential swelling reduced 52.8% after 3 h [24] Reduced 70.5% after 6 h [24] Initial contact angle increased 28.7% and 26.1%, respectively [24]	Matched moisture-resistance measurement gap	Matched moisture-resistance measurement gap
Ignition time	Fire logs: sustained flame after 45–60 s exposure to butane flame [14]	Beeswax-only S7 briquettes: MCC Time 1 128–165.5 s [28]	Dry leaves, 3:8: 17 s [11]	Fire-starter ignition-time measurement gap

Parameter	Paraffin wax	Beeswax	Stearin and stearic–palmitic fatty-acid materials	Candle-wax formulations
	Paraffin-only S6 briquettes: MCC Time 1 155.5–163 s [28]			
Burn duration	Highest-density fire logs: slightly >2 h [14] Wax-bound briquettes: 22 min sawdust; 59 min cocoa-pod [15] Fire-starting briquettes with different waxes: reported range 300–360 s [28]	Beeswax-only S7 formulations included in the reported 300–360 s fire-starting-briquette range [28]	Sawdust, 2:7: 1423 s [11]	Total burn duration not quantified Commercial candles: ~4.5 g h^{-1} burning rate [23] Pure-paraffin candles: ~2.5 g h^{-1} burning rate [23]
Calorific value	Fossil paraffin: 38 MJ kg^{-1} NCV [17] Cocoa-pod/wax briquette: 17.150 MJ kg^{-1} [15]	No matched calorific-value measurement Beeswax-only S7: MCC THR 21.27–22.57 kJ g^{-1} [28]	Matched calorific-value measurement gap	Formulation-specific calorific-value measurement gap Related fossil-paraffin NCV: 38 MJ kg^{-1} [17]
Residue	Fire-log ash: 1.4–3.9% [14] Paraffin-only S6 briquettes: MCC residue 13.68–15.31% [28]	Beeswax-only S7: MCC residue 13.91–14.97% [28] Beeswax-treated wood: TG residual mass under N_2 12.62–13.59% [24]	Post-combustion residue: 6.44–16.61% [11] Sawdust 2:7: 6.44% [11]	Combustion-residue measurement gap in [22,23]
Emission data	Fire logs: VOCs, PAHs and other organic compounds [14] Wax-bound sawdust briquette: $PM_{2.5}$ 124.50 μg m^{-3}; CO 0.67 ppm [15]	Mixed-wax commercial firelighter: qualitative CO and CO_2 [10] Quantitative firelighter-emission measurement gap [10,24,28]	Direct fire-starter pollutant-measurement gap [11] Related stearin candles: black carbon, $PM_{2.5}$, particle-phase PAHs [22]	Black carbon, $PM_{2.5}$, UFP, particle-phase PAHs, NO_x, formaldehyde [22] Aldehydes, BTEX, PAHs [23]
Climate data	Fossil paraffin: 2.83 kg CO_2 eq. kg^{-1} wax [17] Wax-emulsion LCA	Beeswax-specific firelighter LCA gap Related bio-based ketone-wax scenarios: 0.39–3.23 kg CO_2 eq. [17]	Firelighter-specific LCA gap Related PFAD ketone-wax scenarios: 0.39–3.23 kg CO_2 eq. [17] Other fatty-acid feedstocks: −0.07–7.26 kg CO_2 eq. [17]	Candle-specific LCA gap Related fossil-paraffin result: 2.83 kg CO_2 eq. kg^{-1} wax [17]
Evidence type	Direct fire-starting/product evidence [9,28,60] Semi-direct experimental [14–16,50] Indirect LCA [17]	Direct fire-starting/product evidence [10,28] Semi-direct treated-wood [24]	Direct fire-starter evidence [11] Semi-direct candle evidence [22] Material documentation [67,70] Indirect LCA [17]	Semi-direct experimental [22,23] Indirect material/LCA evidence [9,17]

Parameter	Paraffin wax	Beeswax	Stearin and stearic–palmitic fatty-acid materials	Candle-wax formulations
		Indirect material/LCA evidence [17,63,64]		

Table S3. Database-specific search strategies.

Search category	Scopus (Elsevier)	ScienceDirect (Elsevier)	Web of Science Core Collection
Firelighters and wax-coated lignocellulosic materials	**Firelighters and fire-starting products:** TITLE-ABS-KEY ((firelighter OR firelighters OR fire-starter OR firestarters OR {fire starter} OR {fire starters} OR {fire lighter} OR {fire lighters} OR {fire-starting briquette} OR {fire-starting briquettes} OR {fire starting briquette} OR {fire starting briquettes} OR firelog OR firelogs OR {fire log} OR {fire logs}) AND (wax OR waxes OR paraffin OR beeswax OR stearin OR {stearic acid} OR {vegetable oil} OR wood OR {wood wool} OR {wood shaving} OR {wood shavings} OR sawdust OR biomass OR briquette OR briquettes OR charcoal OR cotton OR ginning OR coffee OR {spent coffee ground} OR {spent coffee grounds} OR stove OR stoves OR fireplace OR fireplaces OR barbecue OR barbeque OR grill OR grills OR ignit* OR combust* OR burn* OR emission* OR smoke OR {particulate matter} OR {black carbon} OR safety OR injur* OR accident* OR environmental OR sustainability OR drying OR compactness)) AND NOT TITLE (software OR processor* OR computing OR computer* OR code OR game OR games OR leadership OR novel OR fiction OR literary OR psalter OR cancer OR lactate OR psychologist* OR psychology OR advertising OR wildfire* OR archaeolog* OR prehistori* OR ethnobotan*) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")) AND LIMIT-TO (LANGUAGE , "English")	**Firelighters and related ignition products:** tak("firelighter*" OR "fire lighter*" OR "fire starter*" OR firestarter* OR "fire-starting briquette*" OR "fire starting briquette*" OR "biomass fire starter*" OR "ignition pellet*" OR "lighting cone*" OR "lighter fluid*" OR "charcoal lighter*" OR "barbecue lighter*" OR "ignition aid*" OR firelog* OR "fire log*") AND NOT tak(wildfire* OR "forest fire*" OR firebrand* OR archaeolog* OR forensic* OR "ignitable liquid residue*" OR engine* OR rocket* OR explosive* OR propellant* OR pyrotechnic* OR "flame retardant*" OR intumescent*) AND pub-date AFT 20091231 AND pub-date BEF 20270101 **Wax-coated lignocellulosic materials:** tak((wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "vegetable wax*" OR "candle wax" OR "microcrystalline wax" OR "wax emulsion" OR "vegetable oil") AND ("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR wood OR timber OR bamboo OR cellulose OR lignocellulos* OR paper OR cardboard OR briquette*) AND (coat* OR impregnat* OR binder* OR hydrophob* OR wettability OR "water contact angle" OR "water resistance" OR "dimensional stability" OR moisture OR storage OR durability OR ignition OR combust* OR "burning time" OR "calorific value" OR "heating value")) AND pub-date AFT 20091231 AND pub-date BEF 20270101	**Firelighters and related ignition products:** (TS=("firelighter*" OR "fire lighter*" OR "fire starter*" OR firestarter* OR "fire-starting briquette*" OR "fire starting briquette*" OR "biomass fire starter*" OR "ignition pellet*" OR "lighting cone*" OR "lighter fluid*" OR "charcoal lighter*" OR "barbecue lighter*" OR "ignition aid*" OR firelog* OR "fire log*") NOT TS=(wildfire* OR "forest fire*" OR firebrand* OR archaeolog* OR forensic* OR "ignitable liquid residue*" OR engine* OR rocket* OR explosive* OR propellant* OR pyrotechnic* OR "flame retardant*" OR intumescent*)) AND PY=(2010-2026) **Wax-coated lignocellulosic materials:** TS=((wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "vegetable wax*" OR "candle wax" OR "microcrystalline wax" OR "wax emulsion" OR "vegetable oil") AND ("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR wood OR timber OR bamboo OR cellulose OR lignocellulos* OR paper OR cardboard OR briquette*) AND (coat* OR impregnat* OR binder* OR hydrophob* OR wettability OR "water contact angle" OR "water resistance" OR "dimensional stability" OR moisture OR storage OR durability OR ignition OR combust* OR "burning time" OR "calorific value" OR "heating value")) AND PY=(2010-2026)

Search category	Scopus (Elsevier)	ScienceDirect (Elsevier)	Web of Science Core Collection
	Wax-coated lignocellulosic materials: TITLE-ABS-KEY ((wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "vegetable wax*" OR "candle wax" OR "microcrystalline wax" OR "wax emulsion" OR "vegetable oil") AND ("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR wood OR timber OR bamboo OR cellulose OR lignocellulos* OR paper OR cardboard OR briquette*) AND (coat* OR impregnat* OR binder* OR hydrophob* OR wettability OR "water contact angle" OR "water resistance" OR "dimensional stability" OR moisture OR storage OR durability OR ignition OR combust* OR "burning time" OR "calorific value" OR "heating value")) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))		
Biomass briquettes and related solid-fuel formulations	TITLE-ABS-KEY (("fire-starting briquette*" OR "fire starting briquette*" OR "biomass fire starter*" OR "coffee waste fire starter*" OR "spent coffee ground*" OR "coffee ground*" OR "cotton gin*" OR firelog* OR "fire log*") AND (wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "vegetable wax*" OR "vegetable oil" OR binder*) AND (ignit* OR combust* OR burn* OR "heat release" OR "calorific value" OR "heating value" OR moisture OR ash OR residue OR emission*)) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))	tak(("fire-starting briquette*" OR "fire starting briquette*" OR "biomass fire starter*" OR "coffee waste fire starter*" OR "spent coffee ground*" OR "coffee ground*" OR "cotton gin*" OR firelog* OR "fire log*") AND (wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "vegetable wax*" OR "vegetable oil" OR binder*) AND (ignit* OR combust* OR burn* OR "heat release" OR "calorific value" OR "heating value" OR moisture OR ash OR residue OR emission*)) AND pub-date AFT 20091231 AND pub-date BEF 20270101	TS=(("fire-starting briquette*" OR "fire starting briquette*" OR "biomass fire starter*" OR "coffee waste fire starter*" OR "spent coffee ground*" OR "coffee ground*" OR "cotton gin*" OR firelog* OR "fire log*") AND (wax* OR paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "vegetable wax*" OR "vegetable oil" OR binder*) AND (ignit* OR combust* OR burn* OR "heat release" OR "calorific value" OR "heating value" OR moisture OR ash OR residue OR emission*)) AND PY=(2010-2026)
Wax composition, substrate properties, storage and environmental assessment • Wax composition, thermal properties, production and environmental assessment	TITLE-ABS-KEY ((paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "shea butter" OR "candle wax" OR "vegetable wax*") AND ("melting point" OR "melting range" OR "thermal propert*" OR composition OR "chemical composition" OR "fatty acid composition" OR crystall* OR fractionation OR refining OR hydrogenation OR "life cycle assessment" OR "carbon footprint" OR	tak((paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "shea butter" OR "candle wax" OR "vegetable wax*") AND ("melting point" OR "melting range" OR "thermal propert*" OR composition OR "chemical composition" OR "fatty acid composition" OR crystall* OR fractionation OR refining OR hydrogenation OR "life cycle assessment" OR "carbon footprint" OR	TS=((paraffin OR beeswax OR "bees wax" OR stearin OR "stearic acid" OR "soy wax" OR "palm wax" OR carnauba OR "shea butter" OR "candle wax" OR "vegetable wax*") AND ("melting point" OR "melting range" OR "thermal propert*" OR composition OR "chemical composition" OR "fatty acid composition" OR crystall* OR fractionation OR refining OR hydrogenation OR "life cycle

Search category	Scopus (Elsevier)	ScienceDirect (Elsevier)	Web of Science Core Collection
• Substrate, solid-fuel, moisture, storage and ash properties	"environmental impact")) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch)) TITLE-ABS-KEY (("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR "Scots pine" OR "Norway spruce" OR birch OR fuelwood OR "solid biofuel*" OR briquette* OR pellet* OR "agricultural residue*" OR "wood residue*") AND ("basic density" OR "wood density" OR moisture OR "moisture content" OR storage OR durability OR "mechanical propert*" OR ash OR "ash content" OR "heavy metal*" OR "volatile matter" OR "fixed carbon" OR "calorific value" OR "heating value") AND (substrate OR fuel OR biofuel OR combust* OR ignit* OR firelighter* OR "fire starter*" OR briquette* OR pellet*)) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))	"environmental impact")) AND pub-date AFT 20091231 AND pub-date BEF 20270101 tak(("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR "Scots pine" OR "Norway spruce" OR birch OR fuelwood OR "solid biofuel*" OR briquette* OR pellet* OR "agricultural residue*" OR "wood residue*") AND ("basic density" OR "wood density" OR moisture OR "moisture content" OR storage OR durability OR "mechanical propert*" OR ash OR "ash content" OR "heavy metal*" OR "volatile matter" OR "fixed carbon" OR "calorific value" OR "heating value") AND (substrate OR fuel OR biofuel OR combust* OR ignit* OR firelighter* OR "fire starter*" OR briquette* OR pellet*)) AND pub-date AFT 20091231 AND pub-date BEF 20270101	assessment" OR "carbon footprint" OR "environmental impact")) AND PY=(2010-2026) TS=(("wood wool" OR excelsior OR "wood shaving*" OR sawdust OR "Scots pine" OR "Norway spruce" OR birch OR fuelwood OR "solid biofuel*" OR briquette* OR pellet* OR "agricultural residue*" OR "wood residue*") AND ("basic density" OR "wood density" OR moisture OR "moisture content" OR storage OR durability OR "mechanical propert*" OR ash OR "ash content" OR "heavy metal*" OR "volatile matter" OR "fixed carbon" OR "calorific value" OR "heating value") AND (substrate OR fuel OR biofuel OR combust* OR ignit* OR firelighter* OR "fire starter*" OR briquette* OR pellet*)) AND PY=(2010-2026)
Ignition aids, combustion emissions and safety	**Lighter fluids and related ignition aids:** TITLE-ABS-KEY ({lighter fluid} OR {lighter fluids} OR {illuminating liquid} OR {illuminating liquids} OR (({ignition aid} OR {ignition aids} OR {ignition aider} OR {ignition aiders}) AND (charcoal OR barbecue OR barbeque OR grill* OR stove* OR cookstove* OR combust*)) OR (({lighting cone} OR {lighting cones}) AND (charcoal OR stove* OR cookstove* OR emission* OR performance)) OR (cookstove* AND material* AND (start* OR light*))) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")) AND LIMIT-TO (LANGUAGE , "English") **Firelighter and wax-combustion emissions:** TITLE-ABS-KEY ((firelighter* OR "fire lighter*" OR	**Firelighter and wax-combustion emissions:** tak((firelighter* OR "fire lighter*" OR "fire starter*" OR firestarter* OR "lighter fluid*" OR firelog* OR "fire log*" OR "paraffin candle*" OR "beeswax candle*" OR "stearin candle*" OR "soy wax candle*" OR "wax combustion" OR "paraffin combustion") AND (emission* OR "particulate matter" OR PM1 OR PM2.5 OR "black carbon" OR soot OR smoke OR VOC* OR "volatile organic compound*" OR PAH* OR "polycyclic aromatic hydrocarbon*" OR aldehyde* OR "carbon monoxide" OR "emission factor*")) AND pub-date AFT 20091231 AND pub-date BEF 20270101 **Firelighter safety and injury:** tak((firelighter* OR "fire lighter*" OR "fire starter*" OR firestarter* OR "lighter fluid*" OR bioethanol OR "ethanol fireplace*" OR "fire gel*" OR "barbecue lighter*")	**Firelighter and wax-combustion emissions:** TS=((firelighter* OR "fire lighter*" OR "fire starter*" OR firestarter* OR "lighter fluid*" OR firelog* OR "fire log*" OR "paraffin candle*" OR "beeswax candle*" OR "stearin candle*" OR "soy wax candle*" OR "wax combustion" OR "paraffin combustion") AND (emission* OR "particulate matter" OR PM1 OR PM2.5 OR "black carbon" OR soot OR smoke OR VOC* OR "volatile organic compound*" OR PAH* OR "polycyclic aromatic hydrocarbon*" OR aldehyde* OR "carbon monoxide" OR "emission factor*")) AND PY=(2010-2026) **Firelighter safety and injury:** TS=((firelighter* OR "fire lighter*" OR "fire starter*" OR firestarter* OR "lighter fluid*" OR bioethanol OR "ethanol fireplace*" OR "fire gel*" OR "barbecue lighter*") AND (injur* OR burn* OR poison* OR ingestion

Search category	Scopus (Elsevier)	ScienceDirect (Elsevier)	Web of Science Core Collection
	"fire starter*" OR firestarter* OR "lighter fluid*" OR firelog* OR "fire log*" OR "paraffin candle*" OR "beeswax candle*" OR "stearin candle*" OR "soy wax candle*" OR "wax combustion" OR "paraffin combustion") AND (emission* OR "particulate matter" OR PM1 OR PM2.5 OR "black carbon" OR soot OR smoke OR VOC* OR "volatile organic compound*" OR PAH* OR "polycyclic aromatic hydrocarbon*" OR aldehyde* OR "carbon monoxide" OR "emission factor*")) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))	AND (injur* OR burn* OR poison* OR ingestion OR accident* OR safety OR hazard*)) AND pub-date AFT 20091231 AND pub-date BEF 20270101	OR accident* OR safety OR hazard*)) AND PY=(2010-2026)
	Firelighter safety and injury: TITLE-ABS-KEY ((firelighter* OR "fire lighter*" OR "fire starter*" OR firestarter* OR "lighter fluid*" OR bioethanol OR "ethanol fireplace*" OR "fire gel*" OR "barbecue lighter*") AND (injur* OR burn* OR poison* OR ingestion OR accident* OR safety OR hazard*)) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))	**Ignition-stage stove and cookstove emissions:** tak((cookstove* OR "wood stove*" OR woodstove* OR "pellet stove*" OR "solid fuel stove*" OR fireplace*) AND (ignition OR startup OR "start-up" OR "lighting phase" OR "ignition phase") AND (firelighter* OR "fire starter*" OR "lighter fluid*" OR emission* OR "black carbon" OR "particulate matter")) AND pub-date AFT 20091231 AND pub-date BEF 20270101	**Ignition-stage stove and cookstove emissions:** TS=((cookstove* OR "wood stove*" OR woodstove* OR "pellet stove*" OR "solid fuel stove*" OR fireplace*) AND (ignition OR startup OR "start-up" OR "lighting phase" OR "ignition phase") AND (firelighter* OR "fire starter*" OR "lighter fluid*" OR emission* OR "black carbon" OR "particulate matter")) AND PY=(2010-2026)
	Ignition-stage stove and cookstove emissions: TITLE-ABS-KEY ((cookstove* OR "wood stove*" OR woodstove* OR "pellet stove*" OR "solid fuel stove*" OR fireplace*) AND (ignition OR startup OR "start-up" OR "lighting phase" OR "ignition phase") AND (firelighter* OR "fire starter*" OR "lighter fluid*" OR emission* OR "black carbon" OR "particulate matter")) AND PUBYEAR > 2009 AND PUBYEAR < 2027 AND (DOCTYPE(ar) OR DOCTYPE(re) OR DOCTYPE(cp) OR DOCTYPE(ch))		