

The Mattress and Pillow Buyer's Guide

Choosing a mattress and pillow: what the science says, what to look for, and what to ask in the shop.

A plain guide to the science that decides whether a bed works. It sets out what can actually be measured, and the questions that separate a real answer from a good one. No brand recommendations, because nobody publishes the numbers.

The sleep science behind temperature, support and the air you breathe at night.

THE PRACTICE

The evidence layer the wellness industry is missing

Future Wellness Group is an independent wellness diligence, specification and education business. We work on the numbers that decide whether something does what it claims.

Modalities, devices and environments are sold on mechanism stories, brand tier and design language. The buyer, whether a household or a hotel group, is left to work out which claims are real. Very often the people selling do not know either.

Before you believe a claim, ask four things: what actually changes, how much it changes, what it's counted in, and what took the reading. Where the number is missing, the missing number is the finding.

Assessment	Wellness modalities, equipment and claims assessed against measurable parameters and graded, so buyers know what they are purchasing.
Protocols	The protocols and measurement frameworks that turn equipment into an outcome rather than an amenity sitting in a room.
Environments	The passive layer of light, air and temperature specified for hotels, residences, clubs and workplaces, alongside architects and operators.
Education	Through Future Wellness Academy we train practitioners and operator teams, so the standard is carried by people rather than by a document.



WHY THE BED

The most used object in *any* wellness offer

A third of a life is spent in direct contact with a mattress and pillow, breathing air drawn from within thirty centimetres of them. No other piece of wellness equipment gets that much exposure time, and almost none is chosen with less information.

Sleep is not simply rest. It is a thermally regulated biological state, and the sleep surface is one of the few parts of that state a buyer can control.

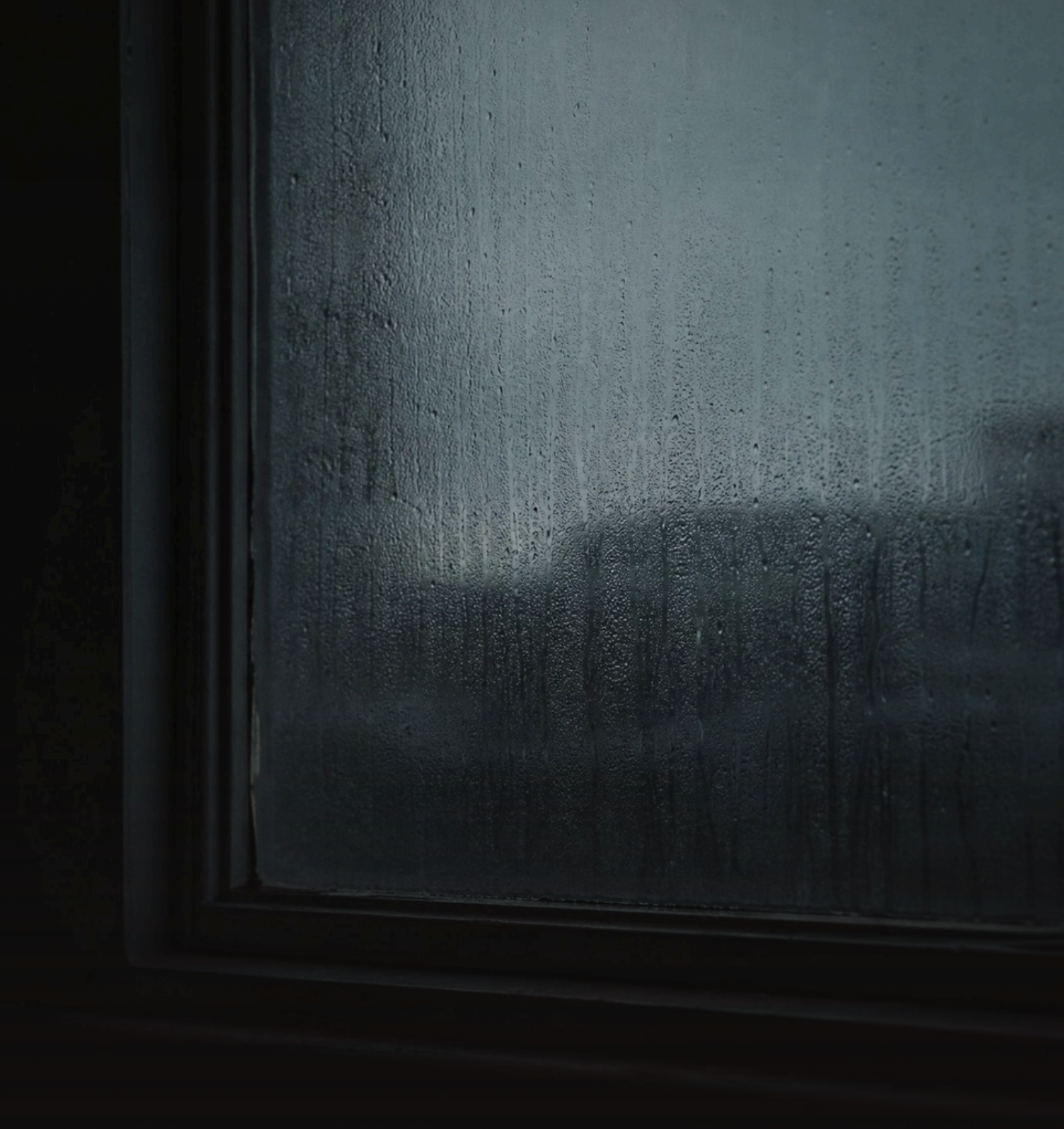
The difficulty

The science is reasonably settled. Almost nothing sold in this category is described in terms the science recognises. Mattresses are sold on adjectives, pillows on filling, sleep technology on features. Very little is sold on the measurements that determine whether it works.

A note on brands

There is no list of recommended products here, and that is deliberate. The consumer sleep market does not publish the figures that would make a recommendation checkable. What follows is more durable: the criteria themselves, so anything put in front of you can be assessed, now or in five years.





PART ONE

What your bed actually has to do

Seven things the evidence tells us about sleep and the sleep surface. Everything in Part two follows from these.

01

Sleep begins with heat leaving the body

Falling asleep is coupled to a fall in core body temperature, and that fall happens because heat leaves the core through the skin. The controlling event is a large increase in blood flow to the skin, especially the hands and feet, which opens a temperature gradient between the extremities and the centre and lets heat escape (Van Someren, 2006; Kräuchi et al., 1999). Sleep is most likely to start when core temperature is falling fastest (Harding, Franks and Wisden, 2019).

This tells you precisely how a bed fails. It does not fail by being warm. It fails by preventing the heat that reaches the skin from going anywhere. Trapped heat raises skin temperature, closes the gradient, and stalls the whole process. What matters is not whether a material feels cool on first contact, but whether the assembled surface keeps moving heat away hour after hour.

20–25°C

Room range where sleep was most efficient and least restless

0.4°C

Skin temperature rise that suppressed night-time waking

87%

Reduction in mite allergen in mattress dust with encasings fitted



02

There are three temperatures,
and only one is on
your thermostat

Most advice quotes a single room temperature. Three separate temperatures are involved, and they behave differently.

Room	The air temperature of the bedroom	In older adults sleeping in their own homes, sleep was most efficient and least restless between 20 and 25°C. Sleep efficiency fell by five to ten per cent as the room warmed from 25 to 30°C, and people varied a lot. It's an observational study in older adults, so it shows a pattern rather than proving cause (Baniassadi et al., 2023).
Bed microclimate	The air trapped under the covers	This is what the body actually experiences. The bedding, not the thermostat, decides what the room temperature means. Research here is thinner than its importance warrants (Troynikov, Watson and Nawaz, 2018).
Skin	The temperature at the surface of the skin	The lever that matters. Changing skin temperature, rather than core temperature, is what changes how easily sleep begins (Van Someren, 2006).

Two people in rooms held at the same temperature can have entirely different nights, because their bedding, duvets and mattresses produce different microclimates. Advice that gives a room temperature and says nothing about what is on the bed is half an instruction.

The thermostat sets the room. The bedding sets the night.

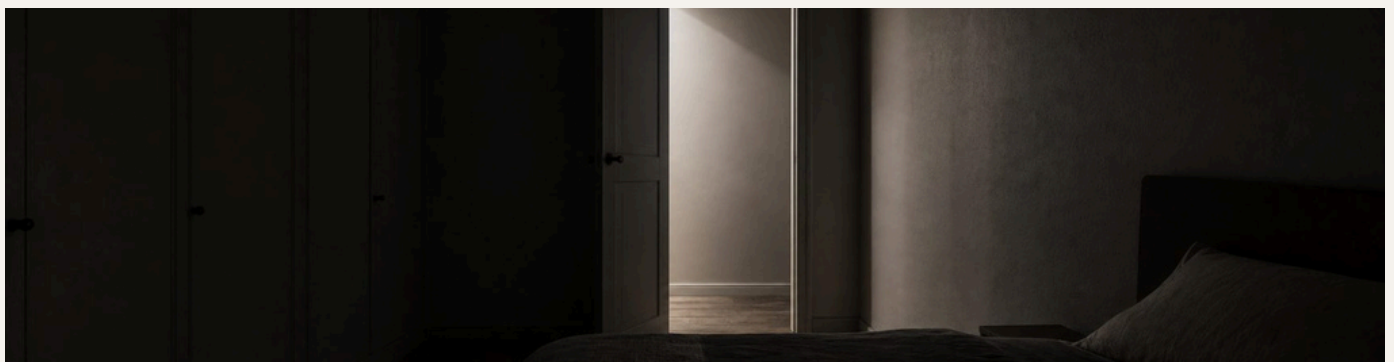
03

Cool room, warm feet. This is not a contradiction

In a controlled study using a suit that regulated skin temperature through the night, raising skin temperature by only 0.4°C, with core temperature unchanged, suppressed night-time waking and shifted sleep towards deeper stages. In older participants the effect almost doubled the proportion of slow wave sleep and reduced the probability of waking too early from 0.58 to 0.04 (Raymann, Swaab and Van Someren, 2008).

The same mechanism explains the bath before bed. A warm bath or shower at 40 to 42.5°C, taken one to two hours before bedtime for as little as ten minutes, was associated with better sleep quality, better efficiency and faster onset in a meta-analysis. It works by driving blood to the palms and soles, widening the gradient and speeding heat loss (Haghighyegh et al., 2019). The authors are open about the evidence base being thin, so treat the timing and the duration as a sensible starting point rather than a settled prescription.

So the target is a cool room, mild warmth at the hands and feet, and a surface that lets the heat generated at the trunk escape. A system that warms the whole body works against the mechanism. So does one that chills the whole surface aggressively, because that can close the blood vessels in the skin, shutting the route heat needs to leave by.



04

Moisture matters as much as heat

Sweating is the second heat loss route, and it's the one bedding most often disables. Humid heat raises the thermal load beyond dry heat at the same temperature, increasing wakefulness and blunting the fall in core temperature. In older men, a night at 32°C rather than 26°C increased wakefulness, reduced REM sleep and suppressed the temperature decline. When the humid heat arrived only in the second half of the night, the thermal load was lower than when it ran all night, so cooling the early hours is what protects sleep. Both studies used groups of eight to ten men, so treat the direction as solid and the numbers as indicative (Okamoto-Mizuno, Tsuzuki and Mizuno, 2004a, 2004b).

This is why breathability is not a luxury feature. A surface can be good at conducting heat and still fail in practice, because a saturated microclimate transmits heat far better than a dry one, and because damp bedding fragments sleep independently of temperature. Heat and moisture always have to be assessed together.

What to measure

Thermal resistance and water vapour resistance, for the mattress as sold including its cover, from the sweating guarded hotplate test (BS EN ISO 11092). A thermal figure alone is half an answer.



05

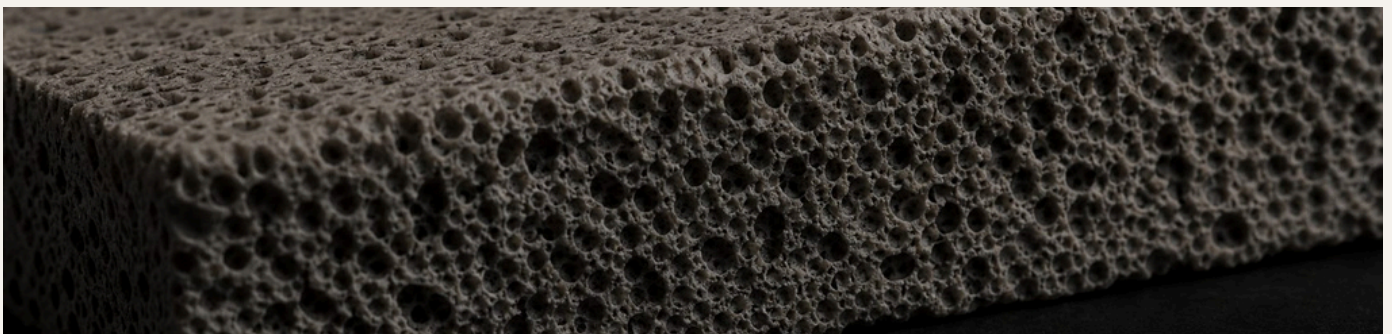
Medium firm is the best supported answer on support

The support evidence is more mature than the temperature evidence, and it points consistently in one direction.

A review of 24 controlled trials found that a mattress described as medium firm, and one that can be self-adjusted, was optimal for sleep comfort, sleep quality and spinal alignment. The same review concluded there wasn't enough evidence to say what temperature the ideal mattress should run at (Radwan et al., 2015).

A 2026 review covering 47 studies across 25 years reached the same conclusion. Medium firm was most consistently favoured over very firm or very soft, associated with better pressure distribution, improved sleep quality, less morning stiffness and lower back pain intensity. Zoning, air adjustable systems and thermal optimisation showed promise but the studies were too varied to pool. Smart and adaptive systems were judged promising but not yet ready for routine recommendation (Caggiari et al., 2026). It's a qualitative synthesis graded Level III, not a pooled analysis, so read it as a strong direction rather than a precise number.

Two things follow. Medium firm is the right starting point for most people, adjusted for body mass, sleep position and build rather than applied uniformly. And if a manufacturer claims a benefit beyond medium firm, from zoning, adaptivity or active climate control, the burden is on them to show it at their own product's settings, because the reviews specifically decline to grant it.



06

The pillow is a fitting problem, not a technology problem

Pillow evidence is weaker than mattress evidence, and it's worth being honest about that. A meta-analysis of nine high quality studies covering 555 participants found that rubber and spring pillows reduced neck pain, waking pain and neck disability and improved satisfaction in people with chronic neck pain, but that pillow design did not change sleep quality. Neck alignment when sleeping on the side was not meaningfully affected by what the pillow was filled with. It was affected by shape and height (Pang, Tsang and Fu, 2021). The effects were real but small, around a quarter of a standard deviation for neck pain. A more recent review of five studies found only minor, non-significant improvements and no clear winner among pillow types (Ghosh, Goyal and Goyal, 2025).

Height and shape relative to shoulder width and sleep position carry almost the entire effect. Filling carries very little of it. Most of the money spent on premium pillow materials is spent on the wrong variable, and a hotel offering seven fillings at one height is offering variety rather than fit.

WHAT THE EVIDENCE SUPPORTS

Room held between 20 and 25°C, with warmth at the hands and feet

Medium firm support, adjusted for body mass, build and sleep position

Heat and water vapour resistance assessed together, for the surface as sold

Pillow height and shape matched to shoulder width, not filling

07

You breathe from inside your bed

Two things in the sleep surface end up in the airway.

Chemistry

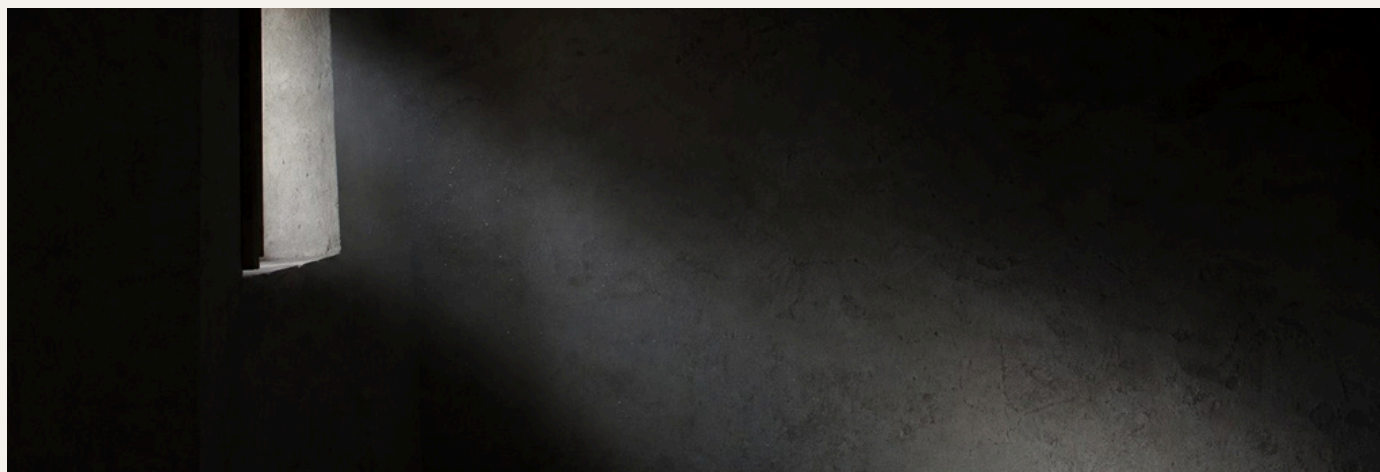
The clearest evidence comes from nap mattresses in daycare centres, tested in a sealed chamber. Used ones in cool, dry conditions gave off tetrachloroethylene and styrene. New ones in warm, humid conditions gave off ethylene oxide. For young children those levels crossed the one in a million cancer risk threshold, and the authors recommended airing new mattresses before use (Zheng et al., 2024). Read that carefully: young children, nap mattresses, a sealed chamber, specific conditions. It doesn't transfer straight to an adult on a double bed in a ventilated room. What it does support is airing anything new for a few days, and being sceptical of non-toxic when there's no test behind it.

Dust mites

House dust mite allergen builds up in mattresses and pillows and is one of the best documented triggers in the bedroom. In a randomised trial of 52 mite sensitive asthmatic patients, allergen impermeable encasings cut mite allergen in mattress dust by 87 per cent and raised morning peak flow (van den Bemt et al., 2004). One honest caveat from the same paper: symptoms were already so mild that no symptom improvement could be shown either way. Used consistently, encasings kept mite, cat and dog allergen significantly lower on children's and parents' mattresses over three and a half years (Simpson et al., 2003).

The finding

An encasing is the single best value intervention in the category. It costs a fraction of a mattress, has measured effect, and works regardless of what is underneath. Premium systems that make allergy claims through airflow and filtration have nothing like the same evidence at the level of the person in the bed.



PART TWO

What to look for in a mattress

Seven criteria, in the order they matter. Each one is measurable, and each has an established test method behind it, whether or not the seller quotes it.

Heat and moisture transfer together	A bed has to move both heat and sweat away from the skin. A surface can handle one and fail at the other, and a damp microclimate carries heat far better than a dry one.	Both a thermal resistance and a water vapour resistance figure, for the mattress as sold including its cover, from the sweating hotplate test (BS EN ISO 11092).
Breathability of the cover	A well ventilated core can be defeated by a sealed or laminated cover. Airflow has to reach the surface you lie on.	An air permeability figure (BS EN ISO 9237) for the cover and any quilted layer, not the words breathable or open-cell.
All night behaviour, not first contact	Gels, cooling fabrics and phase change materials feel cool on first contact, then reach capacity and warm up. First contact coolness is a showroom property.	A temperature trace over eight hours under sustained load. If a seller can only describe the first minute, that is what has been engineered.
Firmness as a number	Soft, medium and firm are not comparable between brands, or across one brand's ranges. Medium firm is the best supported specification, which is useless if nobody defines it.	An indentation hardness figure in newtons (BS EN ISO 2439), and where the zone boundaries fall if the mattress is zoned.

A guarantee is a commercial promise. A durability test is a measurement.

Pressure distribution for your body	Pressure distribution is the mechanism behind the morning stiffness and back pain findings. A mattress that suits a 60 kg side sleeper may not suit a 100 kg one.	Pressure mapping across a range of body weights and in more than one sleeping position, rather than a single demonstration.
Emissions and what it is made of	You breathe from within thirty centimetres of this surface for a third of your life. Ignition resistance is non-negotiable, but how it is achieved is a fair question.	Chamber emission results (BS EN ISO 16000-9 and -6) at 28 days, individual compounds rather than a single total, and a certification number rather than a logo.
Durability against the guarantee	In a hotel or a shared bed the surface is loaded far harder than domestic assumptions allow for.	Height loss and hardness loss after cyclic loading (BS EN 1957), at a stated number of cycles, that actually supports the guarantee period.

If you are looking at an active cooling or heating system

A powered mattress, topper or climate system is a machine that runs all night, next to a sleeping person. It can work very well. It also brings questions a passive mattress does not, and these are the ones most often left unanswered.

Where is the temperature measured? A setpoint held at the pump means nothing if the surface is three degrees away from it.	How does it perform with a body in the bed? Empty bed performance is not the operating condition.
How loud is it at maximum, not minimum? Intermittent pump or fan cycling wakes people that steady noise at the same level does not.	If water circulates, how is the system cleaned and serviced? Warm standing water in tubing is a hygiene question, and it matters most where occupancy is intermittent.
What data does it collect, where does it go, and does the bed still work with capture switched off? Sleep and heart rate data are health data under UK law.	What is it when it fails or loses power? If the answer is an unusable bed, the core function of a bed now depends on a supplier.

Passive or active

A passive surface with high heat capacity and strong moisture transport carries far less that can go wrong: no failure state, no water circuit, no noise, no filters, no data. An active system earns its place where one person uses the bed consistently, sets it up and can maintain it. For a guest who arrives at 23:00 and leaves in two days, passive almost always wins.



PART TWO CONTINUED

What to look for in a pillow

The evidence says height and shape carry the effect. So the criteria start there, and filling comes last.

Compressed height, not shelf height	The height under the weight of the head determines whether the neck stays in line with the spine. The height in the packaging is a number the pillow stops having the moment you lie on it.	A compressed height in centimetres, with the load it was measured under. The single most useful number in the category, and almost never published.
Height retention overnight	A pillow that fits at bedtime and flattens by three in the morning has become a different pillow for the half of the night when waking symptoms are generated.	An indication of how much height remains after several hours of sustained load. Down and low resilience foams behave very differently here.
Shape	Neck alignment on the side is influenced by shape and height, not by what the pillow is filled with.	A profile you can see and measure, and honesty about whether a contour is functional or decorative.
A fitting rule	Broad shoulders need more height. A narrow build needs less. Front sleepers need almost none. Without a rule matching person to pillow, a range of pillows is a range of guesses.	Guidance that connects shoulder width and sleeping position to a specific height, rather than a menu of materials.
Washability	Mite allergen control depends on washing at temperature. A pillow that cannot be washed depends on a protector to do the job.	A stated wash temperature and an honest service life, plus an encasing if the pillow itself cannot be washed hot.
Emissions	The pillow is closer to the airway than anything else in the room, often in direct contact with the face, all night.	The same emission evidence you would ask of a mattress, and a few days of airing before first use.

Choosing by position

Side sleeping needs the most height, because the pillow fills the distance from the mattress to the side of the head. That distance is set by shoulder width, which is why one pillow cannot serve every side sleeper.	Back sleeping needs moderate height, enough to support the curve of the neck without pushing the chin towards the chest.
Front sleeping needs almost no height. Any appreciable pillow forces the neck into rotation and extension at once. It is common in hotels because the bed is unfamiliar, and least often catered for.	Changing position through the night, which most people do, means prioritising the position you spend the most time in, and considering an adjustable fill so height can be tuned rather than guessed.

PART THREE

Six questions that get a real answer

You do not need to be technical to buy well. You need to ask for a number instead of an adjective, and then notice what happens. The questions below are short, polite and unanswerable with a brochure.

1

You say it sleeps cool. What is the thermal and water vapour resistance of the mattress as sold, and who tested it?

Both figures come from the same standard test and take minutes to quote if they exist. Almost no consumer brand publishes them, in a category whose central claim is thermal.

2

You describe it as medium firm. What is that in newtons?

There is a published test for firmness. If the answer is another adjective, the product has not been measured against it, and medium firm on one brand may be firm on another.

3

How does the surface temperature behave over eight hours, not eight minutes?

This separates genuine heat transport from a cooling coating that works until it reaches capacity. Ask for the trace, not the sensation.

4

What are the emission test results, and which individual compounds were measured?

A certification logo is not a certification. Ask for the certificate number, the scheme and the report. Total figures can hide a single compound of concern.

5

What is the compressed height of this pillow, under what load?

The one number that determines whether a pillow fits. If nobody in the shop can answer it, nobody has designed for fit.

6

What evidence supports that claim, in people like me, using this product at these settings?

A percentage improvement in deep sleep needs its own trial, a comparator and a stated population.

A seller who can quote a thread count but not an air permeability figure has told you where the engineering effort went.

PART FOUR

If you are not replacing your bed yet

A mattress is an infrequent, substantial purchase. Most of the mechanism above can be influenced without buying one, and several of these measures are better evidenced than anything at the premium end.

At home

Fit an allergen impermeable mattress and pillow encasing. Low cost, measured effect, works on whatever you already own. If you do one thing on this list, do this one.

Use a bath deliberately rather than habitually. Forty to 42.5°C, one to two hours before bed, for at least ten minutes.

Air a new mattress, topper or pillow for several days before sleeping on it, and pull the covers back for an hour in the morning rather than making the bed immediately.

Change the bedding before you change the bed. Lighter duvets in warmer months, natural fibre sheeting, and two separate duvets for couples with different thermal needs.

Keep the feet warm and the room cool. Socks in bed are not a contradiction of a cool bedroom; they open the route heat leaves by.

Cool the body, not just the room, before bed. A lukewarm shower, or cooling the hands, feet and face, promotes heat loss and eases sleep onset.

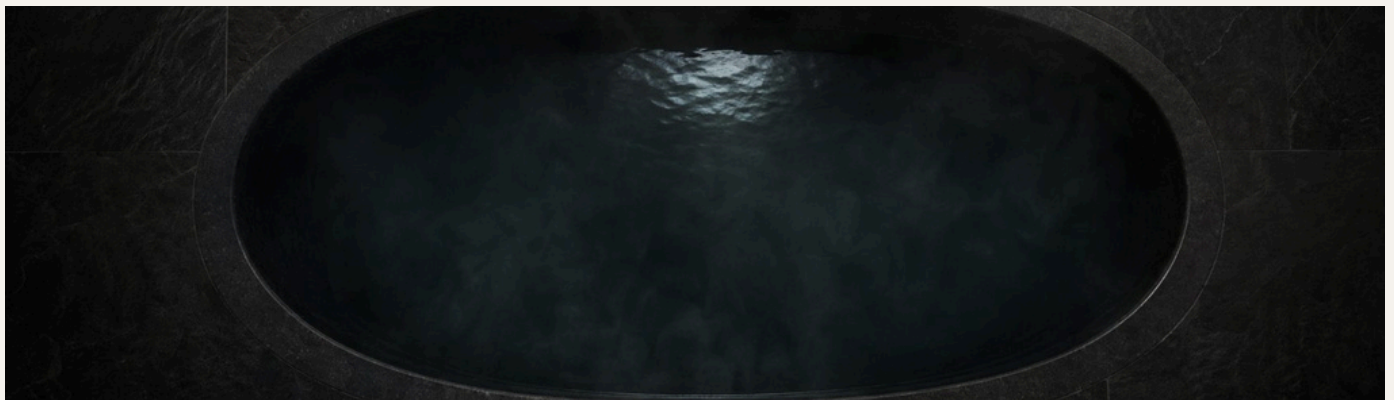
When travelling

Ask for the pillow by height and position rather than by feel. Request a low pillow or a high pillow, not a soft one. Staff routinely conflate softness with height.

Bring a lightweight linen or bamboo sleep sheet if you run hot. It gives you a bedding layer you control in a room you do not.

Ask for a second lighter duvet rather than turning the room down. It changes the microclimate directly.

Set the room cool and accept that the bedding, not the thermostat, decides what the body experiences.





PART FIVE

For hotels, residences and operators

In our work with operators, sleep is consistently the highest-contact and lowest-specified part of the guest experience, delivered by objects most properties buy on price and appearance.

Specifying at scale

Buy on measured criteria, not brand tier	A supplier serving contract markets can usually produce the figures in Part two. Ask at tender stage, when you still have leverage, rather than after installation.
Specify the assembly, not the mattress	The topper, protector, sheet and duvet can undo a good mattress entirely. A heavy synthetic duvet over a breathable surface produces a warm bed.
Check laundering against the specification	Hotel laundry is far more aggressive than domestic. Figures obtained on a new cover need to survive the linen cycle, and a pillow that loses height after twenty washes has a service life rather than a guarantee.
Air new stock before it enters service	Use fragrance-free, low residue detergent. A scented spray defeats the low emission specification you paid for.
Weigh passive against active carefully	Transient occupancy makes active systems harder: guests do not configure them, housekeeping has to service them, and consent for any data capture is materially more complex than in a home.

The pillow menu, done properly

A pillow menu is a fitting system, not a hospitality gesture. It succeeds or fails on whether the right height reaches the right guest. Most fail because they offer materials instead of heights.

Two heights for side sleeping, covering average and broad shoulders	Two options for back sleeping, one contoured and one flat, at moderate height
One very low profile option for front sleeping, disproportionately common in hotels	One adjustable fill option, which absorbs the guests the fixed range misses
One hypoallergenic option, washable at a temperature that controls mite allergen	Six to eight types in total. The number is set by the heights you carry, not the materials

Four questions that guide most selections	Which position do you spend most of the night in? Do you prefer a firmer or a softer pillow? Do you often wake with neck or shoulder stiffness? Do you have any allergy or sensitivity to scents or chemicals? The fourth routes a guest to the low emission and encased options, and is the one a guest is least likely to volunteer.
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How to write each entry

Guests should not need to understand sleep biomechanics. The property needs to.

Name	Functional, not poetic. Side sleeper, high loft.
Best for	Sleep position and build. Side sleepers, broader shoulders, taller guests.
Height	Compressed height in centimetres, with inches alongside for international guests.
Feel	Soft, medium or firm.
Why it works	One sentence. Fills the shoulder to head distance so the neck stays in line with the spine.
Choose this if	Shoulder pressure, neck stiffness on waking, snoring, overheating.

What you can and cannot say

- Fair to say.** We specify our bedding against measured criteria, and here is what they are. True, checkable and rare enough to be a differentiator.
- Fair to say.** Our mattresses and pillows are encased to reduce house dust mite allergen. Evidenced, provided the encasings are actually fitted.
- Not fair to say, without your own data.** Improves your deep sleep, speeds your recovery, reduces your jet lag. These are claims about a guest's biology, and a supplier's mechanism study does not transfer to them. The property, not the manufacturer, carries the exposure.

SPECIFICATION OUTCOME

Thermal and water vapour resistance stated for every bed assembly in service	Firmness recorded in newtons at tender, not described in adjectives
Pillow range built on six to eight compressed heights, published in centimetres	Allergen impermeable encasings fitted to every mattress and pillow

SUMMARY

If you remember six things

Sleep starts with heat leaving	A bed's job is to let heat and moisture escape from the trunk. A material that feels cool for five minutes and then holds heat has failed at the actual task.
Cool room, warm feet	Around 20 to 25°C in the room, with warmth at the hands and feet. A rise of less than half a degree in skin temperature measurably deepens sleep.
Breathability is not a luxury	Moisture transport matters as much as heat transport. Assess the two together, always.
Medium firm, adjusted to you	The best supported general answer, tuned to body mass, build and sleeping position rather than applied uniformly.
Pillow height beats pillow filling	Height and shape carry almost the whole effect. Filling carries very little. Buy for fit, not for material.
Fit an encasing	The best value intervention in the category, with measured effect on allergen and on breathing, whatever you currently sleep on.

Where to go next

Future Wellness Group works on the environmental layer of wellbeing: light, air, temperature and the physical conditions that determine whether an intervention produces the biological outcome it claims. We write specifications for hotels, residences, clubs and workplaces, and we train the teams who deliver them.

If you are specifying bedding at scale, evaluating a sleep technology, or building a wellness proposition that has to survive an informed guest question, we can help you do it against measured criteria rather than marketing copy.

Where the number is
missing, the missing
number is the finding

Future Wellness Academy provides the education layer for practitioners and operator teams, including sleep and circadian foundations.

SOURCES

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All primary sources were verified against PubMed and DOIs confirmed at the date of this version. Where the evidence does not support a number, this guide says so rather than inventing one.

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Test methods and standards referred to

BS 7177	Resistance to ignition of mattresses, divans and bed bases.
BS EN 1957	Beds and mattresses. Test methods for the determination of functional characteristics.
BS EN ISO 2439	Flexible cellular polymeric materials. Determination of hardness (indentation).
BS EN ISO 9237	Textiles. Determination of the permeability of fabrics to air.
BS EN ISO 11092	Textiles. Measurement of thermal and water-vapour resistance (sweating guarded hotplate test).
BS EN ISO 12952	Textiles. Assessment of the ignitability of bedding items.
BS EN ISO 16000-6 and -9	Indoor air. Determination of volatile organic compounds, and emission test chamber method.
SI 1988/1324	The Furniture and Furnishings (Fire) (Safety) Regulations 1988, as amended.

This guide is provided for general information. It is not medical advice, and it does not replace individual assessment where a sleep disorder, pain condition or respiratory condition is present. Version SLEEP-BG-2026.1.