Loft Insulation

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Loft Insulation

- This Bitesize CPD module will be looking at loft insulation and many of the different considerations that energy assessors need to make.

- Errors with loft insulation entry are one of the main causes of audit failure therefore it is important that energy assessors are well aware of the different elements to take account of.

- This CPD module will be looking at the Conventions covering loft insulation entry, the information that the software requires and evidence needed for Q/A purposes.

- Completion of this CPD module will provide ½ hour CPD with a short quiz at the end needed to gain the certificate.

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Loft Insulation

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Loft Insulation

- Loft insulation is one of the most cost-effective energy efficiency measures available for any domestic property with a pitched roof space.

- Putting a layer of insulation in a loft space provides a barrier to heat escaping upwards through the roof space to the outside.

- As heat naturally rises a huge amount of heat can be lost through the roof space which leads to longer running times for the heating system and therefore increased energy costs.

- The costs of insulating a loft space are comparatively small and the measure will often payback the installation cost through savings within 1-2 years of the insulation being put in.

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Loft Insulation

- Given how cost effective the measure is the vast majority of domestic properties with pitched roofs will have a layer of loft insulation contained within.

- Rarely will loft spaces with no insulation be encountered however certain older buildings may for whatever reason not have had any level of insulation laid over time.

- The level of loft insulation present will however vary considerably as the standards for the amount of loft insulation for new buildings as well as the retro-fitted requirements have varied over time.

- Current Building Regulations require a U-Value for roofs which generally equates to around 275-300mm loft insulation at the joists.

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Loft Insulation

- **Most pitched roof spaces will typically be fitted with a hatch that will allow access to the space:**

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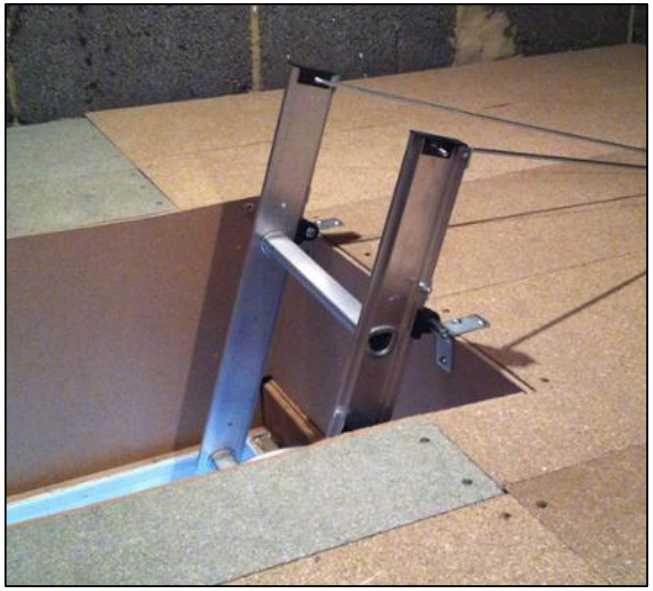
Loft Insulation

- **Many loft spaces will also have a drop-down ladder which an assessor can use however for those that don't the assessor will need to use a separate ladder:**



Loft Insulation

- Lofts will usually have a hatch access point as the loft will often contain equipment such as a water tank or cistern that permanent access will be required to.

- Lofts are also often used for storage and therefore access will be required to in order to place and remove storage material within the space.

- Houses which do not have loft hatches will however be encountered, usually older properties which did not have original heating/water services and therefore had no necessity to access the loft space.

- Houses which have had the ceiling replaced or had wallpaper fixed to the ceiling may also not have an accessible loft space.

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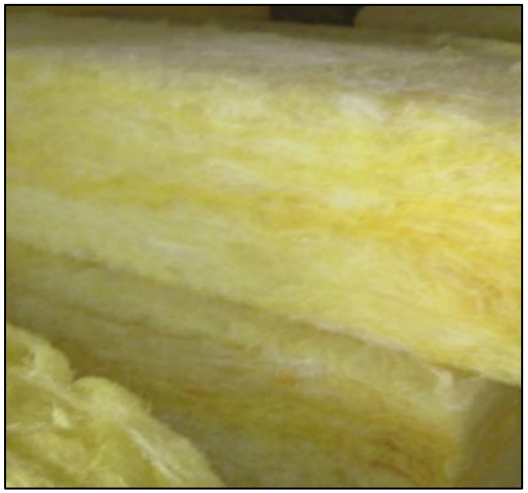
Loft Insulation

- In terms of actual material the majority of insulation will be blanket-type insulation which comes in rolls of rock, glass or mineral fibre:

Rockwool insulation



Glasswool insulation

Mineral fibre insulation

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Loft Insulation

- Regardless of the material used the actual method through which insulation prevents heat from escaping the building is the same.

- The insulation contains within it tiny pockets of air – as air is a poor conductor of heat this minimises the amount of heat which is able to pass through the insulation and up through the roof.

- This is why the greater the depth of insulation the better the insulating qualities, as the increased number of air pockets reduces the amount of heat able to pass through the insulation.

- The multiple fibres contained within the insulation prevent the trapped air from circulating and causing a convection current to be set up.

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RdSAP Convention 3.04

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RdSAP Convention 3.04

- **The Convention which deals with loft insulation for RdSAP EPCs is 3.04:**

#	Topic	Conventions
3.04	Access to loft insulation and rafter insulation	Where safe and practicable access to the loft is possible, loft insulation should be measured and photographic evidence provided of its measured thickness. "No access" means there is no loft hatch or other means of gaining access to the loft space. If there is a loft hatch or other means of gaining access but it could not be used on the date of the site visit (e.g. painted over, obstruction preventing access for health and safety reasons) record as "access, loft insulation unknown". If loft insulation is fully obstructed (e.g. boarded or obscured by items stored) enter "pitched, access, loft insulation unknown" unless householder has documentary evidence (maximum thickness is depth of joists) or lifts the boards or removes the obstructions. If the loft, or part of the loft, is boarded and the assessor can establish and evidence the insulation present under the boards at multiple locations below the boarded area (visible through gaps or extending in from the edges) the boarded area is treated as insulated to the thickness that can be proved by the evidence. If the property has multi-foil or foam insulation at joists or rafters, see convention 3.07. If joist and rafter insulation are both present base the assessment on the joist insulation only. If varying levels of insulation, use an area-weighted average thickness. However, if there is an area with no insulation the dwelling should be split to allow different roof insulation scenarios. In the case of a thatched roof for age band J onwards use 'as built' rather than rafter insulation if there is rafter insulation in addition to the thatch.

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RdSAP Convention 3.04

- We have already discussed the circumstances where there may not be any loft access available and in this instance the entry into the software should be ‘no access’.

- This only covers the circumstance where there is no actual means of access into the loft space; e.g. there is no fixed loft hatch.

- In this circumstance the RdSAP calculation engine will assume a level of loft insulation based upon the age of the building part.

- The RdSAP calculation engine will also suppress any recommendation for loft insulation in this circumstance as although it may be assuming little/no insulation to be present it cannot be certain that this is the case.

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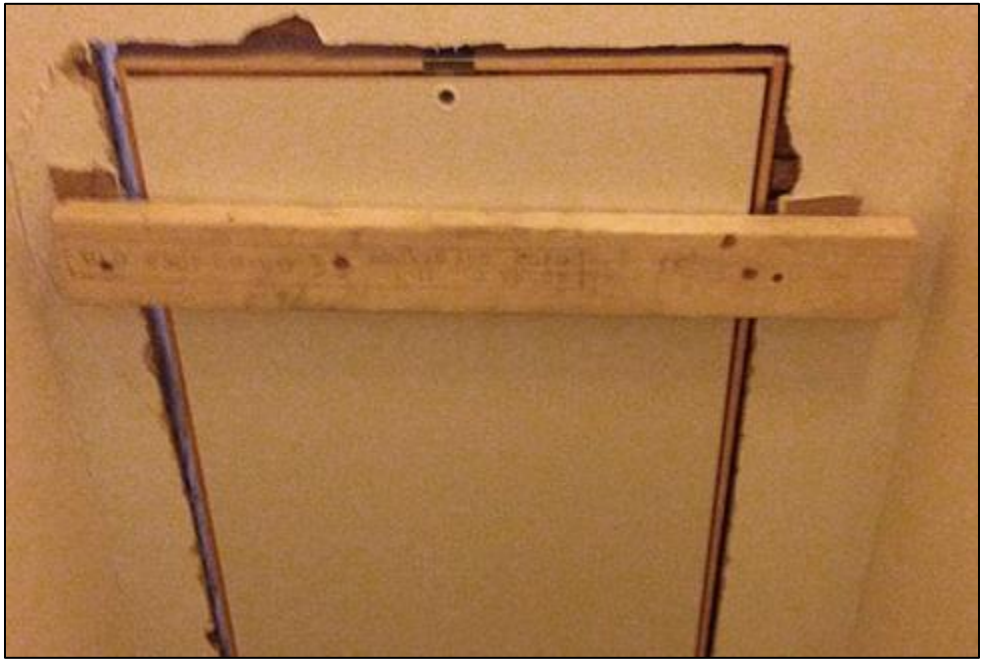
RdSAP Convention 3.04

- **The approach is slightly different for when there is an actual access point into the loft space such as a hatch however for whatever reason on the day of the assessment access could not be gained:**



RdSAP Convention 3.04

- As shown in the image on the previous slide this could be because the loft hatch has been boarded over for whatever reason.
- Alternatively it could be because the loft hatch is locked on the day of the assessment or is located directly above a staircase and a ladder cannot be safely erected.
- In all these circumstances the energy assessor is required to enter the option for ‘access and loft insulation unknown’.
- The RdSAP calculation engine will again suppress the recommendation for any loft insulation and base the current insulation level off of the construction date of the building part.

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RdSAP Convention 3.04

- **The next part of the Convention deals with the situation when a loft space is fully boarded with no access at any point to the insulation:**

RdSAP Convention 3.04

- In this instance the entry should again be access to loft with insulation unknown, as there is no means of checking the level of insulation contained underneath the boarded space.

- The only exception in this instance would be if the homeowner can provide documentary evidence such as a loft insulation certificate showing the depth.

- In practice this will rarely be the case as the loft would typically be boarded straight onto the existing joists at a height of 100mm, and certificates are not normally issued for loft insulation at this height.

- With the entry as insulation unknown the software will assume a u-value based upon the age of the building.

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RdSAP Convention 3.04

- What is more likely to be found in practice is a loft which has been boarded but insulation can be observed at various points where boards have not been laid:

RdSAP Convention 3.04

- With this scenario the Convention states that so long as the insulation can be observed at multiple (+2) locations then it can also be assumed as being present at this depth under the boarded area.

- This assumption can be made as it is likely that the insulation was present within the loft to a standard depth before being boarded over to allow storage space to be made.

- This scenario is more common as the loft is unlikely to be fully boarded all the way to the edge of the loft space.

- The assessor has to observe the gaps and edges of the boarded areas to confirm that the insulation can be seen below the boards.

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RdSAP Convention 3.04

- So far all of the insulation types we have looked at have been traditional rock/glass/mineral wool laid at the joists.
- This type of insulation material is relatively cheap to both purchase and install and is the option of choice when the joists are exposed and there is space to lay insulation within.
- Insulation at the joists also allow the loft space itself to remain cool thereby reducing the volume of house that needs to be heated.
- However when the joists are not accessible for whatever reason then insulation can be placed at the rafters instead.

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RdSAP Convention 3.04

- **Insulation laid at the rafters typically comes in the form of multifoil/kingspan type insulation:**

RdSAP Convention 3.04

- For these types of insulation the actual thickness of the material should be doubled when entering into the software.

- These types of material offer a better insulation quality and therefore doubling the insulation thickness allows a more representative value for heat loss calculations.

- Whilst technically Convention 3.07 specifies that documentary evidence showing the λ-value to be less than 0.025 W/m-K should be provided in practice any Celotex/Kingspan insulation will meet this criteria.

- Properties with insulation at the rafters will fare slightly worse in terms of energy consumption as heat will pass through the loft before meeting the insulation.

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RdSAP Convention 3.04

- **Another situation that assessors are more likely to encounter is when insulation is present at both the joists and rafters:**

RdSAP Convention 3.04

- Now for this situation the Convention used to state that the insulation that should be chosen is the one that was the thickest.

- However this aspect of the Convention was changed a couple of years ago and now states that the insulation that should be selected is the joist insulation regardless of the equivalent thicknesses.

- This would be the case even if the insulation at the joists was 50mm and the rafter insulation a higher value of 100mm.

- This may seem slightly counter-intuitive as the rafter insulation provides a greater level of insulation however as we all know the Conventions are the rules and must be followed at all times!

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RdSAP Convention 3.04

- **The final aspect to this Convention is that to do when there are varying levels of insulation within a loft space:**

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RdSAP Convention 3.04

- This will often occur where too much insulation material was ordered and therefore one section of the loft has a greater amount or alternatively where insulating one section of the loft was too tricky to do.

- In this scenario the Convention states that an area-weighted average thickness should be entered.

- So if 50% of the loft has 300mm loft insulation and the other 50% has 100mm insulation then an area-weighted average of 200mm should be entered.

- There is one caveat to this whereby if one section of the loft has no insulation at all (whilst the rest is insulated) then the building should be split into main property and extension to account for this.

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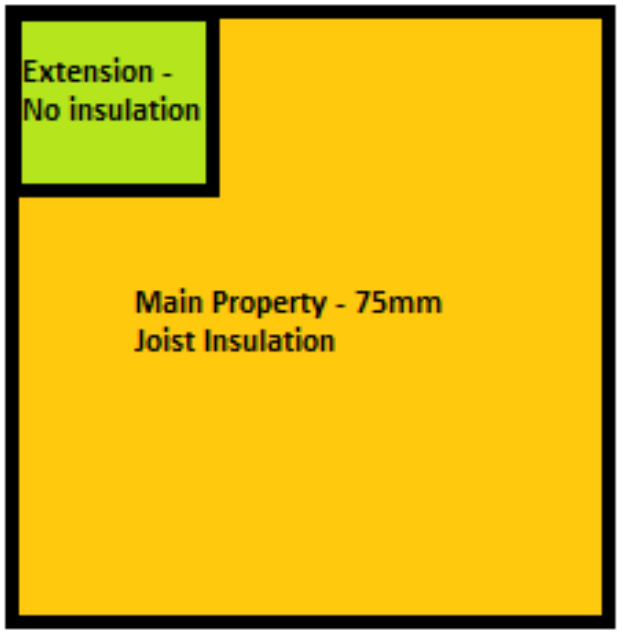
RdSAP Convention 3.04

- So in the below example where a quarter of the loft is uninsulated it should be divided out as a separate extension:



RdSAP Convention 3.04

- That brings us to the end of the review of Convention 3.04 and all of the different aspects associated with it.

- There are a number of different scenarios and circumstances that assessors can encounter when looking at a loft space and it is important that the correct approach is followed for the relevant situation.

- Failure to do so will likely result in an auditing failure as choosing the wrong approach can lead to changes to the rating, recommendations and the certificate itself.

- For the final part of this Bitesize CPD module we will be looking at the evidence requirements for loft insulation.

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Evidence Requirements

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Evidence Requirements

- As with all auditing aspects the general principle is that the auditor should be able to replicate the EPC based purely upon the evidence provided by the energy assessor.

- With that in mind an energy assessor should be obtaining evidence that makes it clear as to the level and extent of loft insulation that has been entered into the software.

- This will typically require at least one image showing the depth of the loft insulation as well as an image showing the extent of the insulation.

- There is no need to take hundreds of images of the loft insulation; the two highlighted above will typically be sufficient.

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Evidence Requirements

- **The below two images for example show clearly the depth and extent of the loft insulation:**

Evidence Requirements

- On occasion it may be that further images are required in order to justify the entry for the loft insulation.
- This could be when there are different levels of insulation thickness present and therefore images would be needed to show the thickness level at each of the different sections.
- Separate images may then also be required to show the extent of the different levels of insulation within the loft space.
- If the loft has been boarded but insulation observed then further images will also be required to show where the insulation is present at the edges and gaps of the boarding.

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Evidence Requirements

- Accompanying all of photo evidence should be written information within the field sheets which clearly states the level of loft insulation present within the property.

- Whilst photo evidence should be obtained for all entries of loft insulation it is a slightly trickier proposition to obtain evidence for when there is no access to the loft space.

- When there is direct loft access (e.g. loft hatch) but there is some kind of obstruction then an image can easily be taken to demonstrate this.

- However when there is no actual loft hatch then the assessor is not expected to take photographs showing the full extent of the ceiling below the loft to prove it.

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Evidence Requirements

- Instead the assessor should record within their site notes that there was no access into the loft space.

- In certain situations such as with a small extension it may be possible to demonstrate the absence of a loft hatch but this is not generally expected:

Evidence Requirements

- To re-iterate the main principle behind the evidence requirements are that the auditor should be able to replicate the EPC based upon the information uploaded by the assessor.

- For the loft insulation entry this should be images which show both the depth and extent of the insulation across all loft spaces within the building.

- This should be accompanied by field sheets/notes which detail the loft insulation present as well as clarifying any issues encountered.

- When there is no direct access into the loft then this should be recorded within the site notes by the assessor and if practical (e.g. a small extension) then a supporting image provided.

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Summary

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Summary

- We have now reached the end of this bitesize CPD module which has looked at the subject of loft insulation.

- We have looked through a number of different issues including:

  - The purpose of loft insulation
  - Relevant Conventions
  - Required evidence to obtain

- These issues can cause a number of problems for assessors, however having completed this CPD module you will hopefully be well aware of how to deal with these scenarios in the future!

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Summary

- It is now time for you to take the multiple choice test associated with this module.
- There are 5 questions in total for this test, and a score of 80% is required to pass the module.
- There is only one correct answer for each question.
- All of the questions relate to information that has been covered within this module.
- Good luck!

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Module Feedback

Many thanks for purchasing and undertaking this CPD module.

We would request all those completing this module to complete a module feedback survey.

This can be found at:

https://www.surveymonkey.co.uk/r/PT5VJKH

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