


# Huddling and shivering

Thermal control: cold stress



## What do huddling and shivering indicate?

- Huddling and shivering are social and muscular thermoregulatory behaviours and indicate cold stress in pigs.
- A good body condition is required to act as both an insulator and an additional energy reserve for creating body heat in cold temperatures.
- The lower limit of the thermal comfort zone of pigs is between 10-15°C depending on body weight. 

{Annex I, Chapter VI, Article 3.2}: ventilation

{Annex I, Chapter VI, Article 3.3}: temperature monitoring system

{Annex I, Chapter VI, Article 3.4}: temperature warning system



*Note: Listed requirements are paraphrasing the literal text of the regulation and are not comprehensive. Moreover, there might be stricter national legislation in place. For a more detailed description on the specific requirements, see the "[Review of climate control and space allowance during transport of pigs](#)"*

## Legal requirements



Council Regulation **EC 1/2005**: Requirements associated with climate comfort are specified in:

{Articles 3-6}: planning, considering weather conditions

{Annex I, Chapter II, Article 1}: requirements regarding the vehicle

{Annex I, Chapter III, Article 2.6}: ventilation

Further requirements addressing climate comfort during long transports (> 8 hours) are given in:

{Annex I, Chapter VI, Article 1.2}: bedding

{Annex I, Chapter VI, Article 3.1}: range of temperature within the vehicle

## Inspection method (recommended)

- The transporter plans transport based on size of vehicle and number and size of animals to be transported.
- During animal transports temperature and humidity should be recorded and records should be made available on request of the official inspector. Further, the driver checks animals for signs of huddling and/or shivering during stops and at arrival.
- The inspector checks if pigs are huddling and/or shivering during stops and at arrival.
- The inspector reports findings to the transporter, and in case of discrepancies between legal requirements and situation during transport corrective actions are taken to ensure the situation complies with legal requirements in the future.



Huddling and shivering are best observed in resting animals; try to observe animals while still resting to link pigs' behaviour to transportation.

### Huddling

Huddling may be defined as a pig is lying with more than half of its body in contact with another pig (i.e. virtually lying on top of another pig). The proportion of animals showing huddling behaviour must be related to the number of resting pigs.

No risk to welfare: 0-20% of pigs resting in the lorry are huddling

High risk to welfare:  $\geq 20\%$  of pigs resting in the lorry are huddling



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Scan the QR code to watch pigs showing huddling behaviour.

Most of these pigs are lying with more than half of their body in contact with another pig. This so called huddling behaviour is a thermoregulatory behaviour and indicates cold stress in pigs.

### Shivering

Shivering is defined as the slow and irregular vibration of any body part, or of the body as a whole due to muscle activity in response to cold. Visually examine the selected group of animals and estimate the percentage of pigs that are shivering.

No risk to welfare: 0-20% of pigs in the lorry are shivering

High risk to welfare:  $\geq 20\%$  of pigs in the lorry are shivering.



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Scan the QR code to watch a video of a shivering pig.

The pig in the corner shows shivering: slow and irregular vibration of any body part, or of the body as a whole due to muscle activity in response to cold.

Source for the assessment method: Welfare Quality® protocol

### Assessment of ambient temperature

To check if the basic requirements for pigs' thermal comfort are met, record the ambient temperature both outside and inside the vehicle. A major hazard during transport of (weaned) pigs under cold weather conditions is the occurrence of draughts. Note that a temperature monitoring system needs to be in place for transports  $> 8$  hours.



EU Reference Centre  
for Animal Welfare Pigs

If you have any questions or suggestions regarding this factsheet please contact [info.pigs@eurcaw.eu](mailto:info.pigs@eurcaw.eu)