Transport guide extreme temperatures

Be aware of the risks of thermal stress

Heat stress can be caused by:
- Hot weather conditions
- Poor ventilation
- Overstocking

Cold stress can be caused by:
- Cold weather conditions
- Water ingress by rain or snow
- Overventilation

Thermal stress (hot or cold) can lead to:
- Weight loss
- Dehydration
- Fatigue/exhaustion
- Abnormal behaviour
- Disease
- Mortality

In cold weather conditions, ventilation rates are often low. This brings the additional risk of low air quality, which may lead to respiratory problems.

Consider the type of cattle that you transport

Thermal conditions are affected by metabolic heat and moisture productions of the animals. Make sure temperatures inside the trailer stay within the thermo-neutral zone. This varies with the types and ages of the animals:

Calves (max 6 months of age)	5-25°C
Cattle ≤ 400 kg	5-25°C
Lactating cows	5-15°C

Calves are sensitive to temperature change, so maintain a stable temperature. Lactating cows may suffer from heat stress above 21°C. Below 5°C, they need extra energy to stay warm.

Truck design

Make sure deck height is adequate

Deck height should be sufficient to ensure correct ventilation inside the truck. Space above the animals should be sufficient for animals to adopt a natural standing position but not so much as to allow mounting.
At least 20 cm clearance above the highest point of the back of the tallest animal should be provided.

Check temperature and humidity sensors

During long transport (more than 8 hours), the truck should contain a monitoring system for temperature and preferably also humidity.

Sensors:

- ✓ Should be located in those parts of the vehicle that are expected to experience the worst (or most extreme) environmental conditions: close to air inlets and outlets where possible and in the upper and front areas of decks on passively ventilated vehicles.
- ✓ At least two sensors are required per level or deck preferably four or more. Separate sensors are required for all separate components of a livestock vehicle.
- ✓ Should be connected to a warning system that goes off if temperatures rise above 30°C or fall below 5°C. An additional warning if temperatures go above [..] is recommended

Temperature and humidity should be:

- ✓ Monitored in the cabin by the driver.
- ✓ Recorded and measurements stored at regular intervals.
- ✓ Measurements should be printed out or displayed during road side checks.

Check water supply system

A water supply system including a water tank and water troughs is mandatory for journeys longer than 8 hours. The water tank should be filled before departure and monitored throughout, and topped-up during stops as required.

Check drinking devices

Drinking devices should be easily accessible for all animals to prevent competition, fights, thirst or heat stress.

Drinking devises should:
- ✓ Be clean
- ✓ Have no sharp edges or protrusions
- ✓ Be specifically designed for cattle (unweaned calves require special devices)

Check ventilation

Passively ventilated trucks:
- ✓ Should have a ventilating surface larger than 40% of the total area of the container sides.
- ✓ Should have a container roof adequately designed for ventilation and air quality.
- ✓ Should not have aerodynamic air foils that restrict airflow into the trailer.

IN HOT WEATHER, CLIMATE-CONTROLLED VEHICLES SHOULD BE USED

Actively ventilated trucks (mandatory for journeys longer than 8 hours):
- ✓ Should be able to keep temperatures inside the truck within 5 and 30°C (with a tolerance of 5°C).
- ✓ Should have ventilation capable of functioning while the truck is standing still for up to 4 hours.
- ✓ Ventilation speed should be capable of being adjusted depending on the circumstances/ outside temperature.

! Make sure there is an emergency generator so the fans can be kept running if the engine breaks down.

LONG JOURNEYS ARE NOT ALLOWED WHEN TEMPERATURE WITHIN THE MEANS OF TRANSPORT CANNOT BE KEPT BETWEEN 5°C AND 30°C, WITH A 5 DEGREE MARGIN.

In practice, this means that long transports should not be allowed if the forecasted outside temperature along the route is > 30°C

Planning

Make a journey plan

Include the following elements related to extreme weather:
✓ Analysis of the weather forecast, use the Livestock Weather Safety index (link) to verify the effect of the weather on cattle.
✓ Choice of the transport company and truck type
✓ If the forecast shows extreme temperatures below 5 °C or above 21 °C (lactating cows)/25 (calves and cattle) at any point during the journey, the transport should not take place, but will have to be scheduled when weather conditions allow it
✓ Up-to-date contingency plan that addresses emergencies related to adverse weather conditions
✓ Description of the route of travel and estimation of its duration. The organizer shall minimize the delay by avoiding known road works and diversions.

The risks of thermal stress are especially high in the following situations:

- Long journeys (more than 8 hours)
- Heat stress: journeys from colder to warmer countries inside and outside the EU
- Cold stress: journeys from warmer climate to cold countries inside and outside the EU
- When the truck breaks down

Adjust the time-schedule based on weather conditions

In hot weather:
✓ Avoid travelling during the hotter parts of the day; travel during cooler conditions at night / drive during the coldest hours of the day/in the evening.

In cold weather:
✓ Drive during warmest hours of the day/late morning until the early evening.

At departure

Check the proper functioning of ventilation, temperature and humidity sensors before loading the animals

Check space allowances

Category	Approximate weight (in kg)	Area in m^2/animal
Small calves	50	0,30 to 0,40
Medium sized calves	110	0,40 to 0,70
Heavy calves	200	0,70 to 0,95
Medium sized cattle	325	0,95 to 1,30
Heavy cattle	550	1,30 to 1,60
Very heavy cattle	>700	>1,60

These figures may vary, depending not only on the animals' weight and size but also on their physical condition, the meteorological conditions and journey time

In hot weather: prevent heat stress

- ✓ Increase the individual space by at least 30%.
- ✓ Increase the headroom above the animals. Raise tiers and decks where possible but not so much as to encourage mounting.
- ✓ Avoid penning animals in the hotter parts of the vehicle, these are located at the front end and higher levels of the vehicle.
- ✓ For calves: use trucks with additional fans for ventilation.

In cold weather: prevent cold stress

- ✓ Reduce space allowance if animals have more than the minimum allowed.
- ✓ Provide additional bedding or insulation.
- ✓ Adjust flaps or windows and use protective sheeting to protect all animals from rain/snow and wind chill. Make sure air circulation is not impeded.
- ✓ Keep animals as dry as possible.
- ✓ Prevent freezing of drinkers/water lines by using preferably heaters, or adding mixtures such as glycerine and glucose to the water supply.
- ✓ Particularly for calves: pre-warm vehicles by using heaters prior to loading.

On the road

In hot weather: prevent heat stress

When driving:
- ✓ Keep the vehicle moving to maintain a constant air flow.
- ✓ Minimise the journey times and number of stops.

When stopping:
- ✓ Park in the shade.
- ✓ Do not park near other vehicles.
- ✓ Put on ventilation. For passively ventilated trucks: put the vehicle in the right angle to the wind direction and make sure lateral flaps or shutters are fully open.
- ✓ Never leave the vehicle without working ventilation and an attendant nearby.

In cold weather: prevent cold stress

When driving:
- ✓ Reduce ventilation from vent flaps

When stopping:
- ✓ Park in an area that provides protection from the wind.
- ✓ Add extra weather boards to keep wind or freezing rain out. Make sure ventilation is kept adequate.

Check temperature and humidity sensors

- ✓ If temperatures rise above 25°C: activate ventilation system.
- ✓ If temperatures rise above 30°C: take measures to reduce the temperature.

Stop regularly to check the condition, behaviour and spatial distribution of the animals

If animals are panting or sweating, they are experiencing heat stress:
✓ Provide drinking water as often as possible.
✓ Increase ventilation.
✓ Prepare operators at the place of destination for immediate unloading

If animals are shivering or huddling, they are experiencing cold stress:
✓ Provide food if they show signs of hunger.
✓ Improve protection from precipitation and wind.

If animals have watering eyes, nasal discharge or are retching, they are suffering from bad air quality:
✓ Remove animals from situation or
✓ improve ventilation or
✓ otherwise lower level of noxious gas.

If these measures cannot be implemented, animals should be unloaded at the nearest place available.

At arrival

Protect cattle from adverse weather conditions during unloading

Provide adequate housing conditions

Temperature within the housing facilities should be kept within the thermo-neutral zone (see page 1). To achieve this, facilities should be equipped with:
✓ Building insulation to prevent frost.
✓ Adequate mechanical or natural ventilation.

If temperatures are not within the thermo-neutral zone (see page 1)
✓ Too low: apply additional heating (especially for calves).
✓ Too high: provide more floor space, additional fans for ventilation and water spraying.

! Trucks with less effective ventilation should be unloaded as a priority.