

## Minimum space allocations for housing laboratory animals: Comparison of UK, EU and USA guidance

Many UK funders have signed up to the standards outlined in the policy document '[Responsibility in the use of animals in bioscience research](#)' which sets out expectations for grant holders to comply with. The standards apply to research conducted both within and outside of the UK. The emphasis is on exceeding the legal minima for space allocations. With more collaborative opportunities for overseas partnerships, researchers need to be aware of the differences in space allocations in order that the funders' expectations can be met. To help researchers we have compared the minimum space allocations for the UK, EU and USA using:

- [Home Office Code of Practice for the housing and care of animals bred, supplied, or used for scientific purposes.](#)
- [Directive 2010/63/EU of the European Parliament on the protection of animals used for scientific purposes.](#)
- [Institute for Laboratory Animal Research Guide for the care and use of laboratory animals, eighth edition.](#)

The data was compiled in April 2022 and primarily focuses on the species covered by the NC3Rs [peer review service](#), including the Checklists on the use of animals outside of the UK.

### How to use this document

- Navigate to the relevant table using the hyperlinked table of contents.
- Notable differences in space allocations between regions (UK, EU, USA) are highlighted by text above the tables. Where this is the case, the greatest values should be considered the minimum space allocation regardless of the geographical location of the animals.
- Where footnotes are in italics, this information has been copied directly from the relevant legislation or guidance for that region. The associated region will be stated or evident from where the typographical notation (e.g. \*, †, ‡) is placed within the table.
- Where footnotes are not in italics, this information has been added by the NC3Rs and not copied directly from another document.

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## Mice

**Table 1.1 Mice: minimum space allocation for post-weaned stock and animals used in procedures**

Region	Weight (g)	Floor area (cm <sup>2</sup> )	Floor area per animal (cm <sup>2</sup> )	Height (cm)
UK	< 20	330	60	12
UK	20-25	330	70	12
UK	25-30	330	80	12
UK	> 30	330	100	12
EU	≤ 20	330	60	12
EU	21-25	330	70	12
EU	26-30	330	80	12
EU	> 30	330	100	12
USA	< 10	-	38.7	12.7
USA	10-15	-	51.6	12.7
USA	15-25	-	77.4	12.7
USA	> 25	-	96.7	12.7

**Table 1.2 Mice: minimum space allocation for post-weaned stock – short-term and under close welfare monitoring only**

Region	Weight (g)	Floor area (cm <sup>2</sup> )	Floor area per animal (cm <sup>2</sup> )	Height (cm)
UK	< 20	950	40	12
UK	< 20	1500	30	12
EU	< 20	950	40	12
EU	< 20	1500	30	12
USA	-	-	-	-

Space allocations for post-weaned mice under conditional higher stocking densities are not given within the USA guidance.

The allocations given in Table 1.2 for UK and EU are conditional on the following: *Post-weaned mice under 20 g may be kept at these higher stocking densities for the short period after weaning until issue, provided that the animals are housed in larger enclosures with adequate enrichment, and these housing conditions do not cause any welfare deficit such as increased levels of aggression, morbidity or mortality, stereotypes and other behavioural deficits, weight loss, or other physiological or behavioural stress response.*

**Table 1.3 Mice: minimum space allocation for breeding animals and offspring**

<b>Region</b>	<b>Floor area (cm<sup>2</sup>)</b>	<b>Floor area per animal (cm<sup>2</sup>)</b>	<b>Height (cm)</b>
UK	330*	-	12*
EU	330*	-	12*
USA	330	-	12.7

*\* Monogamous pair (outbred/inbred) or trio (inbred) + litters. For each additional female plus litter 180 cm<sup>2</sup> shall be added.*

## Rats

**Table 2.1 Rats: minimum space allocation for post-weaned stock and animals used in procedures**

Region	Weight (g)	Minimum total floor area (cm <sup>2</sup> )	Floor area per animal (cm <sup>2</sup> )	Height (cm)
UK	< 20*	330*	60*	12*
UK	< 200	800	200	18
UK	200-250	800	250	18
UK	250-300	800	250	20
UK	300-400	800	350	20
UK	400-600	800	450	20
UK	> 600	1500	600	20
EU	≤ 200	800	200	18
EU	201-300	800	250	18
EU	301-400	800	350	18
EU	401-600	800	450	18
EU	> 601	1500	600	18
USA	< 100	-	109.60	17.80
USA	100-200	-	148.35	17.80
USA	200-300	-	187.05	17.80
USA	300-400	-	258.00	17.80
USA	400-500	-	387.00	17.80
USA	> 500	-	451.50	17.80

\* Stock animals only, see weight (g) of < 200 (UK) for space allocation during procedures.

**Table 2.2 Rats: minimum space allocation for post-weaned stock – short-term and under close welfare monitoring only**

Region	Weight (g)	Minimum total floor area (cm <sup>2</sup> )	Floor area per animal (cm <sup>2</sup> )	Height (cm)
UK	< 50	1500	100	18
UK	50-100	1500	125	18
UK	100-150	1500	150	18
UK	150-200	1500	175	18
UK	< 100	2500	100	18
UK	100-150	2500	125	18
UK	150-200	2500	150	18
EU	≤ 50	1500	100	18
EU	51-100	1500	125	18
EU	101-150	1500	150	18
EU	151-200	1500	175	18
EU	≤ 100	2500	100	18
EU	101-150	2500	125	18
EU	151-200	2500	150	18
USA	-	-	-	-

Space allocations for rats for short-term and under close welfare monitoring are not given within the USA guidance.

**Table 2.3 Rats: minimum space allocation for breeding animals and offspring**

Region	Minimum total floor area (cm <sup>2</sup> )	Floor area per animal (cm <sup>2</sup> )	Height (cm)
UK	900*	-	18.0
EU	800*	-	18.0
USA	800	-	17.8

\* Mother and litter. For each additional adult animal permanently added to the enclosure.

## Rabbits

Large discrepancies are found between UK, EU and USA space allocations for rabbits, use the greatest values as the minimum.

**Table 3.1 Rabbits: minimum space allocation for breeding animals**

Region	Weight (kg)	Total floor area with nest box (m <sup>2</sup> )*	Total floor area without nest box (m <sup>2</sup> )	Minimum cage height (cm)
UK	< 3.0	0.45*	0.40	45
UK	3.0-5.0	0.64*	0.64	45
UK	> 5.0	0.68*	0.64	60
EU	< 3.0	0.45	0.35	45
EU	3.0-5.0	0.52	0.42	45
EU	> 5.0	0.64	0.54	60
USA	-	-	-	-

\* For rabbits over 2 kg the minimum floor area per animal shall be 0.20 m<sup>2</sup>.

Space allocations for breeding rabbits are not given within the USA guidance.

**Table 3.2 Rabbits: minimum space allocation for young animals (< 10 weeks old)**

Region	Age	Floor area (m <sup>2</sup> )	Floor area per group housed animal (m <sup>2</sup> )	Height (m)
UK	Weaning to 7 weeks	0.40	0.15	0.40
UK	7-10 weeks	0.40	0.15 or 0.20*	0.40 or 0.45†
EU	Weaning to 7 weeks	0.40	0.08	0.40
EU	7-10 weeks	0.40	0.12	0.40
USA	-	-	-	-

\* For rabbits over 2 kg the minimum floor area per animal shall be 0.20 m<sup>2</sup>.

† For rabbits over 2 kg the minimum height shall be 0.45 m.

Space allocations for rabbits < 10 weeks old are not given within the USA guidance.



**Table 3.3 Rabbits: minimum space allocation for breeding and supply animals (> 10 weeks with a raised area in the enclosure)**

Region	Final body weight (kg)	Floor area for 1 rabbit (m <sup>2</sup> )	Floor area for 2 rabbits (m <sup>2</sup> )	Floor area for 3 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for 4 to 6 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for > 6 rabbits (m <sup>2</sup> )	Height (m)
UK	< 2.0	0.35	0.35	0.65	0.30	0.25	0.45
UK	2.0-2.5	0.35	0.40	0.65	0.30	0.25	0.45
UK	2.5-3.0	0.35	0.50	0.75	0.25 or 0.30*	0.25	0.45
UK	3.0-3.5	0.42	0.60	0.90	0.30	0.30	0.45
UK	3.5-4.0	0.42	0.80	1.20	0.40	0.40	0.45
UK	4.0-5.0	0.54	1.08	1.62	0.54	0.54	0.45
UK	5.0-6.0	0.54	1.08	1.62	0.54	0.54	0.60
UK	> 6.0	0.60	1.20	1.80	0.60	0.60	0.60
EU	< 3.0	0.35	0.35	0.65	0.30	0.25	0.45
EU	3.0-5.0	0.42	0.42	0.72	0.30	0.25	0.45
EU	> 5.0	0.54	0.54	0.84	0.30	0.25	0.60
USA	< 2	0.14	0.28	0.42	0.14	0.14	0.41†
USA	2-4	0.28	0.56	0.84	0.28	0.28	0.41†
USA	4-5.4	0.37	0.74	1.11	0.37	0.37	0.41†
USA	> 5.4	≥ 0.46	≥ 0.92	≥ 1.38	≥ 0.46	≥ 0.46	0.41†

\* The actual additional areas (m<sup>2</sup>) are: for the fourth animal 0.11; for the fifth animal 0.10; for the sixth animal 0.10; for the seventh animal 0.14 and thereafter 0.11.

† Larger rabbits may require more cage height to allow animals to sit up.

Areas have been converted from cm to m and rounded to two decimal places.

**Table 3.4 Rabbits: minimum space allocation for breeding and supply animals (> 10 weeks without a raised area in the enclosure)**

Region	Final body weight (kg)	Floor area for 1 rabbit (m <sup>2</sup> )	Floor area for 2 rabbits (m <sup>2</sup> )	Floor area for 3 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for 4 to 6 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for > 6 rabbits (m <sup>2</sup> )	Height (cm)
UK	< 2.0	0.35	0.35	0.65	0.30	0.25	45
UK	2.0-2.5	0.35	0.40	0.65	0.30	0.25	45
UK	2.5-3.0	0.35	0.50	0.75	0.25 or 0.30*	0.25	45
UK	3.0-3.5	0.42	0.60	0.90	0.30	0.30	45
UK	3.5-4.0	0.42	0.80	1.20	0.40	0.40	45
UK	4.0-5.0	0.54	1.08	1.62	0.54	0.54	45
UK	5.0-6.0	0.54	1.08	1.62	0.54	0.54	60
UK	> 6.0	0.60	1.20	1.80	0.60	0.60	60
EU	< 3.0	0.47 †	0.58 †	-	-	-	45
EU	3.0-5.0	0.56 †	0.70 †	-	-	-	45
EU	> 5.0	0.72 †	0.90 †	-	-	-	60
USA	< 2	0.14	0.28	0.42	0.14	0.14	40.6 ‡
USA	2-4	0.28	0.56	0.84	0.28	0.28	40.6 ‡
USA	4-5.4	0.37	0.74	1.11	0.37	0.37	40.6 ‡
USA	> 5.4	≥ 0.46	≥ 0.92	≥ 1.38	≥ 0.46	≥ 0.46	40.6 ‡

\* For the seventh rabbit 0.25 m<sup>2</sup>; for the eighth rabbit 0.28 m<sup>2</sup>; thereafter 0.30 m<sup>2</sup> (areas have been converted from cm<sup>2</sup> to m<sup>2</sup> and rounded to two decimal places).

† If for scientific or veterinary reasons a raised area cannot be used, the enclosure shall be 33% larger for a single rabbit and 60% larger for two rabbits.

‡ Larger rabbits may require more cage height to allow animals to sit up.

For the USA, with or without a raised area is not specified therefore the values are as for Table 3.3.

**Table 3.5 Rabbits: minimum space allocation for animals used in procedures (> 10 weeks with a raised area in the enclosure)**

Region	Final body weight (kg)	Floor area for 1 rabbit (m <sup>2</sup> )	Floor area for 2 rabbits (m <sup>2</sup> )	Floor area for 3 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for 4 to 6 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for > 6 rabbits (m <sup>2</sup> )	Height (cm)
UK	< 2.0	0.35	0.35	0.65	0.30	0.25	45
UK	2.0-3.0	0.40*(0.05)	0.52*(0.15)	0.78*(0.13)	0.30	0.26† (0.01)	45
UK	3.0-4.0	0.42	0.52*(0.10)	0.78*(0.06)	0.30	0.26† (0.01)	45
UK	4.0-5.0	0.54*(0.12)	0.66*(0.19)	0.99*(0.27)	0.33† (0.03)	0.33† (0.08)	45
UK	5.0-6.0	0.54	0.66*(0.12)	0.99*(0.15)	0.33† (0.03)	0.33† (0.08)	60
UK	>6.0	0.60*(0.06)	0.80*(0.23)	1.20*(0.34)	0.40*(0.11 or 0.10‡)	0.40(0.14 or 0.11‡)	60
EU	< 3.0	0.35	0.35	0.65	0.30	0.25	45
EU	3.0-5.0	0.42	0.42	0.72	0.30	0.25	45
EU	> 5.0	0.54	0.54	0.84	0.30	0.25	60
USA	< 2	0.14	0.28	0.42	0.14	0.14	40.5
USA	2-4	0.28	0.56	0.84	0.28	0.28	40.5
USA	4-5.4	0.37	0.74	1.11	0.37	0.37	40.5
USA	> 5.4	≥ 0.46	≥ 0.92	≥ 1.38	≥ 0.46	≥ 0.46	40.5

\* For rabbits that are use animals, for the purpose of calculating the minimum floor area, an area of the raised area provided up to the figure in parentheses may be included.

† For rabbits that are use animals, for the purpose of calculating the minimum additional floor area per animal, an additional area of the raised area provided of up to the figure in parentheses may be included.

‡ The actual additional areas (m<sup>2</sup>) are: for the fourth animal 0.11; for the fifth animal 0.10; for the sixth animal 0.10; for the seventh animal 0.14 and thereafter 0.11 (areas have been converted from cm<sup>2</sup> to m<sup>2</sup> and rounded to two decimal places).

For USA with or without a raised area is not specified therefore the values are as for Table 3.3.

**Table 3.6 Rabbits: minimum space allocation for animals used in procedures (> 10 weeks without a raised area in the enclosure)**

Region	Final body weight (kg)	Floor area for 1 rabbit (m <sup>2</sup> )	Floor area for 2 rabbits (m <sup>2</sup> )	Floor area for 3 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for 4 to 6 rabbits (m <sup>2</sup> )	Additional floor area per rabbit for > 6 rabbits (m <sup>2</sup> )	Height (cm)
UK	< 3.0	0.47	0.56	0.86	0.30	0.25	45
UK	3.0-3.5	0.56	0.56	0.86	0.30	0.26	45
UK	3.5-4.0	0.56	0.67	0.97	0.30	0.26	45
UK	4.0-5.0	0.56	0.67	0.99	0.30	0.33	45
UK	5.0-6.0	0.71	0.86	1.16	0.30	0.25 or 0.33*	60
UK	> 6.0	0.71	0.86	1.20	0.40	0.40	60
EU	< 3.0	0.4655	0.58	-	-	-	45
EU	3.0-5.0	0.5586	0.70	-	-	-	45
EU	> 5.0	0.7182	0.90	-	-	-	60
USA	< 2	0.14	0.28	0.42	0.14	0.14	40.5
USA	2-4	0.28	0.56	0.84	0.28	0.28	40.5
USA	4-5.4	0.37	0.74	1.11	0.37	0.37	40.5
USA	> 5.4	≥ 0.46	≥ 0.92	≥ 1.38	≥ 0.46	≥ 0.46	40.5

\* For the seventh rabbit 0.25 m<sup>2</sup>, thereafter 0.33 m<sup>2</sup> (areas have been converted from cm<sup>2</sup> to m<sup>2</sup> and rounded to two decimal places).

For USA with or without a raised area is not specified therefore the values are as for Table 3.3.

**Table 3.7 Rabbits: Optimum dimensions for raised areas**

Region	Final body weight (kg)	Optimum size (cm <sup>2</sup> )	Optimum height from the enclosure floor (cm)
UK	< 3.0	55 x 25	25
UK	3.0-5.0	55 x 30	25
UK	> 5.0	60 x 35	30
EU	< 3.0	55 x 25	25
EU	3.0-5.0	55 x 30	25
EU	> 5.0	60 x 35	30
USA	-	-	-

In USA guidance raised areas are recommended for rabbits but specific dimensions are not provided.

## Cats

Large discrepancies are found between UK, EU and USA space allocations for cats, use the greatest values as the minimum allocation.

**Table 4.1 Cats: minimum space allocation for post-weaned stock, brood stock and animals used in procedures**

Region	Group size or individual weight	Total floor area (m <sup>2</sup> )	Shelf area (m <sup>2</sup> )	Height (m)
UK	One adult	1.50*	0.50	2.00
UK	Additional adults	0.75*	0.25	2.00
EU	One adult	0.50*	2.00	1.50
EU	Additional adults	0.25*	2.00	0.75
USA	Weight: ≤ 4 kg	0.28	0.61	0.61†
USA	Weight: > 4 kg	0.37†	0.61†	0.61†

\* Floor area excludes shelves.

† Larger animals may require more space to meet performance standards.

† Height has been converted from cm to m and rounded to two decimal places.

**Table 4.2 Cats: minimum space allocation for female and offspring**

Region	Animal grouping	Space allocation
UK	Queen and litter <u>up to</u> three weeks of age	<i>The minimum space in which a queen and litter up to the age of three weeks may be held is the space for a single cat.</i>
UK	Queen and litter <u>from</u> three weeks of age	<i>The minimum pen size for any holding of queens and litters is 2 m<sup>2</sup> and 2 m high, which shall be gradually increased so that by four months of age litters have been re-housed following the space requirements for adults.</i>
EU	Queen and litter	<i>The minimum space in which a queen and litter may be held is the space for a single cat, which shall be gradually increased so that by four months of age litters have been rehoused following the space requirements for adults.</i>
USA	-	Space allocations for female cats and offspring are not given within the USA guidance.

## Dogs

Large discrepancies are found between UK/EU and USA space allocations for dogs, use the greatest values as the minimum allocation.

**Table 5.1 Dogs: minimum space allocation for post-weaned stock and brood stock**

Region	Weight (g)	Enclosure/pen size (m <sup>2</sup> )	Floor space per group housed animal (m <sup>2</sup> )	Height (m)
UK	< 5	4.50	0.50	2.00
UK	5-10	4.50	1.00	2.00
UK	10-15	4.50	1.50	2.00
UK	15-20	4.50	2.00	2.00
UK	> 20	8.00	4.00	2.00
EU	≤ 5	4.00	0.50	2.00
EU	6-10	4.00	1.00	2.00
EU	11-15	4.00	1.50	2.00
EU	16-20	4.00	2.00	2.00
EU	> 20	8.00	4.00	2.00
USA	< 15	-	0.74	*
USA	≤ 30	-	1.20	*
USA	> 30	-	≥ 2.40	*

\* Cage height should be sufficient for the animals to comfortably stand erect with their feet on the floor.

Enclosures that allow greater freedom of movement and unrestricted height (i.e. pens, runs, or kennels) are preferable. Enclosures that allow greater freedom of movement and unrestricted height (i.e., pens, runs, or kennels) are preferable.

For UK and EU: The space allowances detailed are based on the requirements of beagles, but giant breeds should be provided with allowances significantly in excess of these. For breeds other than the laboratory beagle, space allowances should be determined in consultation with veterinary staff.

For USA: These regulations (USDA 1985) mandate that the height of each cage be sufficient to allow the occupant to stand in a “comfortable position” and that the minimal square feet of floor space be equal to the “mathematical square of the sum of the length of the dog in inches (measured from the tip of its nose to the base of its tail) plus 6 inches; then divide the product by 144.”

**Table 5.2 Dogs: minimum space allocation for female and offspring**

Region	Space allocation
UK	<i>A nursing bitch and litter shall have the same space allowance as a single bitch of equivalent weight.</i>
EU	<i>A nursing bitch and litter shall have the same space allowance as a single bitch of equivalent weight.</i>
USA	Space allocations for female dogs and offspring are not given within the USA guidance.

**Table 5.3 Dogs: minimum space allocation for animals used in procedures**

Region	Weight (g)	Enclosure/pen size (m <sup>2</sup> )	Floor area for one or two dogs (m <sup>2</sup> )	For each additional animal add a minimum of (m <sup>2</sup> )	Height (m)
UK	< 10	4.5*	4.5*	2.0	2.0
UK	10-20	4.5*	4.5*	2.5	2.0
UK	> 20	8.0*	8.0*	4.0	2.0
EU	≤ 20	4.0*	4.0*	2.0	2.0
EU	> 20	8.0*	8.0*	4.0	2.0
USA	< 15	-	0.74	-	< 15†
USA	≤ 30	-	1.20	-	≤ 30†
USA	> 30	-	≥ 2.40	-	> 30†

\* Dogs that are pair or group housed may each be constrained to half the total space provided (2.25 m<sup>2</sup> for a dog under 20 kg, 4 m<sup>2</sup> for a dog over 20 kg) while they are undergoing procedures, if this separation is essential for scientific purposes. The period for which a dog is so constrained shall not exceed four hours at a time. Dogs shall where possible be provided with outside runs.

† Cage height should be sufficient for the animals to comfortably stand erect with their feet on the floor. Enclosures that allow greater freedom of movement and unrestricted height (i.e. pens, runs, or kennels) are preferable.

## Macaques

Large discrepancies are found between EU/UK and USA space allocations for macaques, use the greatest values as the minimum allocation.

**Table 6.1 Macaques: minimum space allocation for all animals**

Region	Weight (kg)	Age	Enclosure size (m <sup>2</sup> )	Enclosure volume (m <sup>3</sup> )	Volume per animal (m <sup>3</sup> )	Height (m)
UK	0.5 - 5.0*	< 3 years	2.00*	3.60†	1.00†	1.80†
UK	5.0 - 12.0*	> 3 years	2.00†	3.60‡	1.80‡	1.80‡
EU	-	< 3 years	2.00*	3.60†	1.00†	1.80†
EU	-	> 3 years	2.00†	3.60‡	1.80‡	1.80‡
USA	≤ 1.5§	Very young infants*	-	-	0.15	0.76
USA	1.6 - 3.0§	Older infants and juveniles*	-	-	0.21	0.76
USA	3.1 - 10.0§	Adolescents and adults*	-	-	0.30	0.76
USA	10.1 - 15.0§	Larger adults*	-	-	0.43	0.81

\* Estimated ranges for weight (EU and UK) and life stage (US) for *Macaca mulatta* have been added to this table by the NC3Rs to facilitate comparisons between the UK, EU and USA space allocations.

† An enclosure of minimum dimensions may hold up to three animals.

‡ An enclosure of minimum dimensions may hold up to two animals.

§ These guidelines apply to any monkey species housed in pairs or groups.

**Table 6.2 Macaques: minimum space allocation for animals held for breeding purposes**

Region	Volume per animal (m <sup>3</sup> )	Height (m)
UK	3.5*	2.0
EU	3.5*	2.0
USA	-	-

\* In breeding colonies no additional space/volume allowance is required for young animals up to two years of age housed with their mother.

Space allocations for macaques held for breeding purposes are not given within the USA guidance.



## Pigs

Large discrepancies are found between UK, EU and USA space allocations for pigs, use the greatest values as the minimum allocation.

**Table 7.1 Pigs and minipigs: minimum space allocation for animals used in procedures**

Region	Number of animals	Weight (kg)	Enclosure size (m <sup>2</sup> )	Floor area per animal (m <sup>2</sup> )	Lying space per animal* (m <sup>2</sup> )	Minimum length of feed rack or trough per animal (m)
UK	-	< 5	2.00	1.00	0.10	0.20
UK	-	5-10	2.00	1.00	0.11	0.20
UK	-	10-20	2.00	1.00	0.18	0.20
UK	-	20-30	2.00	1.00	0.24	0.20
UK	-	30-50	2.00	1.30	0.33	0.25
UK	-	50-70	3.00	2.00	0.41	0.30
UK	-	70-100	3.00	2.00	0.53	0.30
UK	-	100-150	4.00	2.70	0.70	0.35
UK	-	> 150	5.00	3.75	0.95	0.40
UK	-	Adult boars †	7.50	-	1.30	0.50
EU	-	≤ 5	2.00	0.20	0.10	-
EU	-	6-10	2.00	0.25	0.11	-
EU	-	11-20	2.00	0.35	0.18	-
EU	-	21-30	2.00	0.50	0.24	-
EU	-	31-50	2.00	0.70	0.33	-
EU	-	51-70	3.00	0.80	0.41	-
EU	-	71-100	3.00	1.00	0.53	-
EU	-	101-150	4.00	1.35	0.70	-
EU	-	> 150	5.00	2.50	0.95	-
EU	-	Adult boars †	7.50	-	1.30	-
USA	1	< 15	-	0.72	-	-
USA	1	16-25	-	1.08	-	-
USA	1	26-50	-	1.35	-	-
USA	1	51-100	-	2.16	-	-
USA	1	101-200	-	4.32	-	-
USA	1	> 200	-	≥ 5.40	-	-
USA	2 - 5	< 25	-	0.54	-	-
USA	2 - 5	26-50	-	0.90	-	-
USA	2 - 5	51-100	-	1.80	-	-
USA	2 - 5	101-200	-	3.60	-	-
USA	2 - 5	> 200	-	≥ 4.68	-	-
USA	> 5	< 25	-	0.54	-	-
USA	> 5	26-50	-	0.81	-	-
USA	> 5	51-100	-	1.62	-	-
USA	> 5	101-200	-	3.24	-	-
USA	> 5	> 200	-	≥ 4.32	-	-

\* In thermoneutral conditions.

† Conventional.

## Sheep and goats

Table 8.1 Sheep and goats: minimum space allocation for animals used in procedures

Region	Number of animals	Weight (kg)	Minimum enclosure size (m <sup>2</sup> )	Minimum floor area per group housed animal (m <sup>2</sup> )	Minimum partition height (m)	Trough space for ad-libitum feeding (m/animal)	Trough space for restricted feeding (m/animal)
UK	-	< 20	2.0	1.3	1.0*	0.35	0.35
UK	-	20-35	2.0	1.3	1.2*	0.35	0.35
UK	-	35-60	2.8	1.9	1.2*	0.35	0.40
UK	-	> 60	3.0	1.9	1.5*	0.35	0.50
EU	-	< 20	1.0	0.7	1.0*	0.1	0.25
EU	-	21-35	1.5	1.0	1.2*	0.1	0.30
EU	-	36-60	2.0	1.5	1.2*	0.12	0.40
EU	-	> 60	3.0	1.8	1.5*	0.12	0.50
USA	1	< 25	-	0.9	-	-	-
USA	1	26-50	-	1.35	-	-	-
USA	1	> 50	-	≥ 1.8	-	-	-
USA	2 - 5	< 25	-	0.76	-	-	-
USA	2 - 5	26-50	-	1.12	-	-	-
USA	2 - 5	> 50	-	≥ 1.53	-	-	-
USA	> 5	< 25	-	0.67	-	-	-
USA	> 5	26-50	-	1.02	-	-	-
USA	> 5	> 50	-	≥ 1.35	-	-	-

\* Minimum partition height applies only to goats. Due consideration should also be given to providing adequate partitions for certain agile breeds of sheep.

## Equines

Table 9.1 Equines: minimum space allocation for animals used in procedures

Region	Weight (kg)	Wither height (WH) (m)	Floor area for each animal held singly or in groups of three or fewer (m <sup>2</sup> per animal)	Floor area for each animal held in groups of four or more (m <sup>2</sup> per animal)	Minimum floor area for foaling box or mare with foal (m <sup>2</sup> )	Minimum enclosure height (m)
UK	-	1.00-1.48	12.0	6.0	16.0	3.0
UK	-	1.48-1.60	17.0	9.0	20.0	3.0
UK	-	> 1.60	20.0	(2 x WH) <sup>2</sup>	20.0	3.0
EU	-	1.00-1.40	9.0	6.0	16.0	3.0
EU	-	141-160	12.0	9.0	20.0	3.0
EU	-	> 1.60	16.0	(2 x WH) <sup>2</sup>	20.0	3.0
USA	-	≥ 1.48	12.96	12.96	-	-
USA	-	< 1.48	6.48	-	-	-
USA	≤ 200	< 1.48	-	5.4	-	-
USA	> 200	< 1.48	-	≥ 6.48	-	-

WH = wither height

For USA space allocations, horses are classified as having a wither height >1.48 m and ponies are classified as having wither height of <1.48 m.

## Cattle

Large discrepancies are found between UK and EU and USA space allocations for trough space, use the greatest values as the minimum allocation.

**Table 10.1 Cattle: minimum space allocation for animals used in procedures**

Region	Number of animals	Weight (kg)	Minimum enclosure size (m <sup>2</sup> )	Minimum floor area per group housed animal (m <sup>2</sup> )	Trough/feed rack space for ad-libitum feeding of polled cattle (m/animal)	Trough/feed rack for restricted feeding of polled cattle (m/animal)
UK	-	< 100	2.5	2.30	0.30	0.30
UK	-	100-150	4.25	3.40	0.35	0.50
UK	-	150-200	4.25	3.40	0.40	0.50
UK	-	200-400	6.0	4.80	0.55	0.60
UK	-	400-600	9.0	7.50	0.65	0.70
UK	-	600-800	11.0	8.75	0.65	0.80
UK	-	> 800	16.0	10.0	0.65	1.00
EU	-	< 100	2.5	2.30	0.10	0.30
EU	-	101-200	4.25	3.40	0.15	0.50
EU	-	200-400	6.0	4.80	0.18	0.60
EU	-	401-600	9.0	7.50	0.21	0.70
EU	-	600-800	11.0	8.75	0.24	0.80
EU	-	> 800	16.0	10.0	0.30	1.00
USA	1	< 75	-	2.16	-	-
USA	1	75-200	-	4.32	-	-
USA	1	201-350	-	6.48	-	-
USA	1	351-500	-	8.64	-	-
USA	1	501-650	-	11.16	-	-
USA	1	> 650	-	≥ 12.96	-	-
USA	2 - 5	< 75	-	1.8	-	-
USA	2 - 5	75-200	-	3.6	-	-
USA	2 - 5	201-350	-	5.4	-	-
USA	2 - 5	351-500	-	7.2	-	-
USA	2 - 5	501-650	-	9.45	-	-
USA	2 - 5	> 650	-	≥ 10.8	-	-
USA	> 5	< 75	-	1.62	-	-
USA	> 5	75-200	-	3.24	-	-
USA	> 5	201-350	-	4.86	-	-
USA	> 5	351-500	-	6.48	-	-
USA	> 5	501-650	-	8.37	-	-
USA	> 5	> 650	-	≥ 9.72	-	-

## Xenopus

Table 11.1 *Xenopus*: minimum space allocation for adult animals, excluding breeding procedures\*

Region	Body length (snout to vent) (cm)	Minimum water surface area for one animal (cm <sup>2</sup> )	Minimum water surface area for each additional animal in group (cm <sup>2</sup> )	Minimum water depth (cm)
UK	< 6	160.0	40.0	6.0
UK	6-9	300.0	75.0	8.0
UK	9-12	600.0	150.0	10.0
UK	> 12	920.0	230.0	12.5
EU	< 6	160.0	40.0	6.0
EU	6-9	300.0	75.0	8.0
EU	9-12	600.0	150.0	10.0
EU	> 12	920.0	230.0	12.5
USA	-	-	-	-

\*Standards apply to holding (i.e. husbandry) tanks but not to those tanks used for natural mating and super-ovulation for reasons of efficiency, as the latter procedures require smaller individual tanks. Space requirements are determined for adults in the indicated size categories; juveniles and tadpoles shall either be excluded, or dimensions altered according to the scaling principle.

No space requirements or stocking densities are detailed for *Xenopus* in USA guidance.

## Zebrafish

**Table 12.1 Zebrafish: minimum space allocations for all animals**

Region	Space allocation
UK	<p>No space requirements, water volumes or stocking densities are detailed for any fish species. The following general guidance is provided for fishes:</p> <p><i>The stocking density of fish shall be based on the total needs of the fish in respect of environmental conditions, health and welfare. Fish shall have sufficient water volume for normal swimming, taking account of their size, age, health and feeding method.</i></p> <p>For guidance specific to zebrafish, the Code of Practice for the Housing and Care of Animals Bred, Supplied or Used for Scientific Purposes references the RSPCA's document, <a href="#">Guidance on the housing and care of zebrafish <i>Danio rerio</i></a>, which states:</p> <p><i>Fish should not be kept in 'crowded' conditions. Keeping 5 [zebra]fish per litre is common, although further research is required to ascertain preferred space requirements from a welfare perspective.</i></p>
EU	<p><i>Water volumes smaller than 1 litre shall not be used for adult zebrafish. Stocking densities shall not exceed 10 adult fish/litre. Tank size and shape shall allow the fish to perform their natural behaviour and swimming activity.</i></p>
USA	<p>No space requirements, water volumes, or stocking densities are detailed for any fish species. The following example of typical practice for zebrafish is provided:</p> <p><i>In the United States, for example, adult zebrafish (<i>Danio rerio</i>) in typical biomedical research settings are generally housed 5 adult fish per liter of water [1], but this housing density varies when breeding and for housing younger animals [1]. This guidance is not necessarily relevant for other species of fish and may change as research advances [2].</i></p> <p>[1] Matthews M et al. 2002. A virtual tour of the guide for zebrafish users. <i>Lab Animal</i> 31:34-40. <a href="https://doi.org/10.1038/5000140">doi: 10.1038/5000140</a></p> <p>[2] Lawrence C. 2007. The husbandry of zebrafish (<i>Danio rerio</i>): A review. <i>Aquaculture</i> 269:1-20. <a href="https://doi.org/10.1016/j.aquaculture.2007.04.077">doi: 10.1016/j.aquaculture.2007.04.077</a></p>