KRUUSE Anaesthesia Consumables – Intubation

Index

Endotracheal Intubation

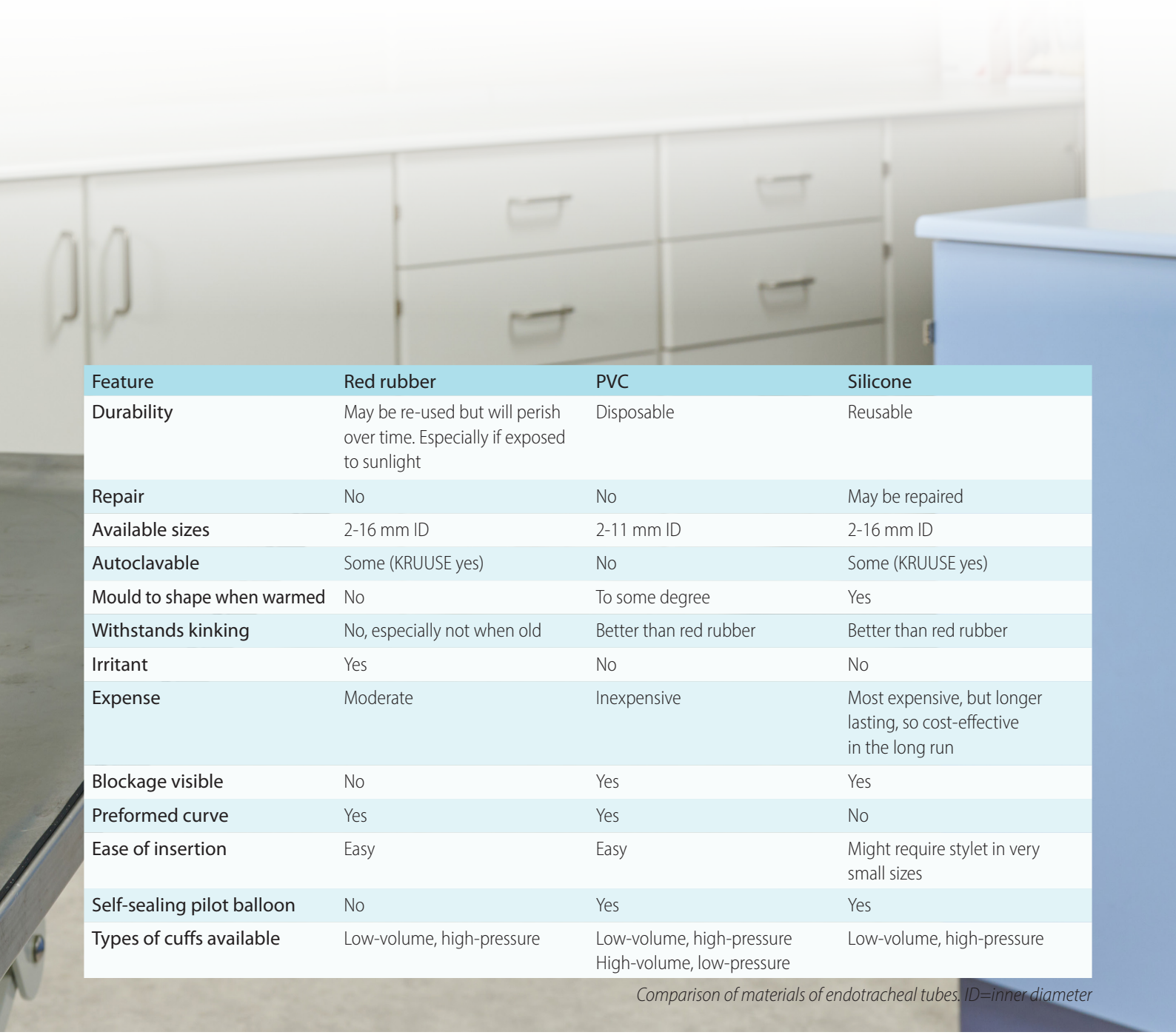
Endotracheal intubation is the placement of a tube that extends from the oral cavity into the trachea.

Intubation is a basic procedure performed prior to surgery.

When intubating routinely, we might stop considering what materials we use, or why.

As with anaesthesia and surgical procedures, we can challenge ourselves by asking if we can do better?

Are our procedures and materials up-to-date, or are we still using the same types of ET tubes as we did 15 years ago, because it simply turned into practice procedure?



Feature	Red rubber	PVC	Silicone
Durability	May be re-used but will perish over time. Especially if exposed to sunlight	Disposable	Reusable
Repair	No	No	May be repaired
Available sizes	2-16 mm ID	2-11 mm ID	2-16 mm ID
Autoclavable	Some (KRUUSE yes)	No	Some (KRUUSE yes)
Mould to shape when warmed	No	To some degree	Yes
Withstands kinking	No, especially not when old	Better than red rubber	Better than red rubber
Irritant	Yes	No	No
Expense	Moderate	Inexpensive	Most expensive, but longer lasting, so cost-effective in the long run
Blockage visible	No	Yes	Yes
Preformed curve	Yes	Yes	No
Ease of insertion	Easy	Easy	Might require stylet in very small sizes
Self-sealing pilot balloon	No	Yes	Yes
Types of cuffs available	Low-volume, high-pressure	Low-volume, high-pressure High-volume, low-pressure	Low-volume, high-pressure

Comparison of materials of endotracheal tubes. ID=inner diameter

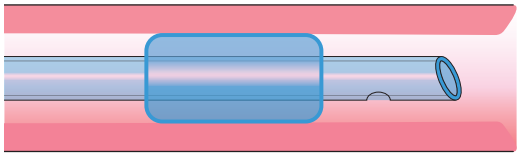
Purpose of intubation

1. To administer inhalation anesthetic drugs
2. To ensure a patent airway in unconscious animals
3. To administer oxygen
4. To provide ventilatory assistance

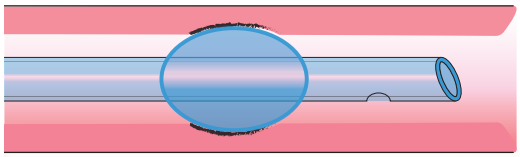
Endotracheal Tubes are manufactured in different materials such as rubber, PVC, and silicone. Usually, a pilot balloon is used as an indicator that the cuff is inflated.

The oval hole opposite the bevel is called "Murphy eye". It allows gas to flow through the tube in case the bevel becomes obstructed or is positioned against the tracheal wall.

Cuff types



- High-volume, low-pressure: In these types, the region of pressure is spread over a wider area. This means less risk of damaging the tracheal mucosa. However, liquid may pass the cuff due to the small folds that may develop in the cuff



- Low-volume, high-pressure: Provides great protection of the airway, but the narrow area of high pressure due to the profile of the cuff may cause damage to the tracheal mucosa

KRUUSE Silicone Endotracheal Tubes, small animals

KRUUSE Silicone ET Tubes are soft, flexible and conform to the airway contours and minimise the risk of trauma.

The transparent design allows detection in case by development of mucus or other undesired occurrences.

These silicone ET tubes can be reused, disinfected, and sterilised in the autoclave at 121°C (250°F) up to 20 times.

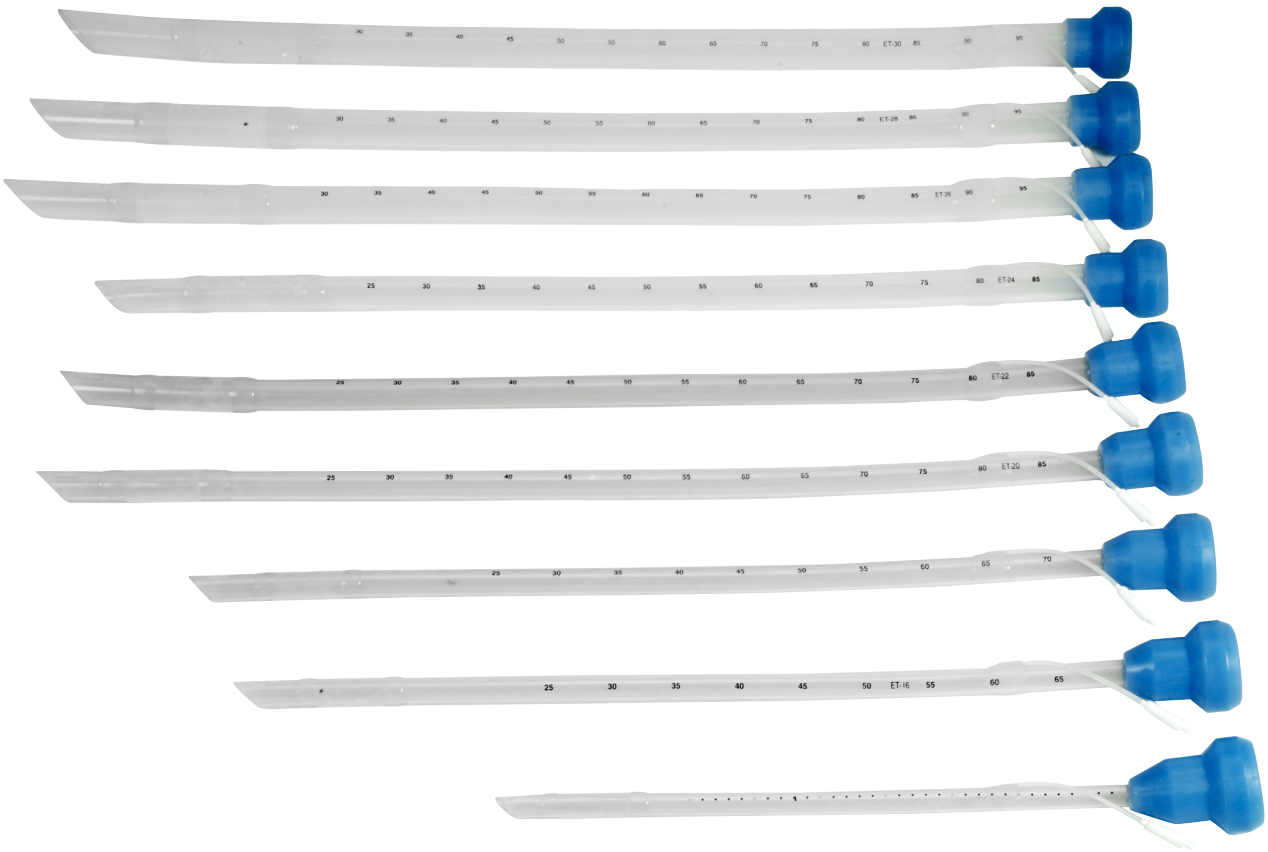
They have a high biocompatibility, sustainability, and a radiopaque line facilitates visualisation.

Always inflate cuff before use to check for any leakage, and deflate cuff before removal or re-positioning.

- Autoclaveable and hygienic
- Medium-volume, medium-pressure
- Transparent material
- Reusable
- Soft and easily adaptable
- Economic
- Optimal sustainability
- Good kink resistance

Cat. No	Description	Type	Size, Metric ID/OD	Size, Imperial	Package
271621	KRUUSE Silicone ET Tube	w. Cuff and Connector	3 mm / 4.7 mm	14 Fr x 16 cm (6.3")	1/pk
271622	KRUUSE Silicone ET Tube	w. Cuff and Connector	4 mm / 6.0 mm	18 Fr x 18 cm (7")	1/pk
271623	KRUUSE Silicone ET Tube	w. Cuff and Connector	5 mm / 7.3 mm	22 Fr x 20 cm (7.9")	1/pk
271624	KRUUSE Silicone ET Tube	w. Cuff and Connector	6 mm / 8.7 mm	26 Fr x 28 cm (11")	1/pk
271625	KRUUSE Silicone ET Tube	w. Cuff and Connector	7 mm / 10 mm	30 Fr x 30 cm (11.8")	1/pk
271626	KRUUSE Silicone ET Tube	w. Cuff and Connector	8 mm / 11 mm	33 Fr x 33 cm (13")	1/pk
271627	KRUUSE Silicone ET Tube	w. Cuff and Connector	9 mm / 12.3 mm	37 Fr x 34 cm (13.4")	1/pk
271628	KRUUSE Silicone ET Tube	w. Cuff and Connector	10 mm / 14.3 mm	43 Fr x 36 cm (14.2")	1/pk
271629	KRUUSE Silicone ET Tube	w. Cuff and Connector	11 mm / 15.7 mm	47 Fr x 40 cm (15.7")	1/pk
271631	KRUUSE Silicone ET Tube	w. Cuff and Connector	12 mm / 17.0 mm	51 Fr x 44 cm (17.3")	1/pk
271632	KRUUSE Silicone ET Tube	w. Cuff and Connector	14 mm / 18.2 mm	54 Fr x 48 cm (18.9")	1/pk

KRUUSE Silicone Endotracheal Tubes, large animals



- Autoclaveable and hygienic
- Medium-volume, medium-pressure cuff
- Good kink resistance
- Transparent material
- Reusable
- Soft and easily adaptable
- Economic
- Optimal sustainability
- Cuff repair kit available

Cat. No	Description	Type	Size, Metric ID/OD	Size, Imperial	Package
282200	KRUUSE Silicone ET Tube	w. Cuff and connector	14 mm / 19 mm	57 Fr x 48 cm (18.9")	1/pk
282210	KRUUSE Silicone ET Tube	w. Cuff and Connector	16 mm / 22 mm	66 Fr x 70 cm (27.6")	1/pk
282220	KRUUSE Silicone ET Tube	w. Cuff and Connector	18 mm / 24 mm	72 Fr x 75 cm (29.5")	1/pk
282230	KRUUSE Silicone ET Tube	w. Cuff and Connector	20 mm / 26 mm	78 Fr x 90 cm (35.4")	1/pk
282240	KRUUSE Silicone ET Tube	w. Cuff and Connector	22 mm / 30 mm	90 Fr x 90 cm (35.4")	1/pk
282250	KRUUSE Silicone ET Tube	w. Cuff and Connector	24 mm / 32 mm	96 Fr x 90 cm (35.4")	1/pk
282260	KRUUSE Silicone ET Tube	w. Cuff and Connector	26 mm / 35 mm	105 Fr x 100 cm (39.4")	1/pk
282270	KRUUSE Silicone ET Tube	w. Cuff and Connector	28 mm / 39 mm	117 Fr x 100 cm (39.4")	1/pk
282280	KRUUSE Silicone ET Tube	w. Cuff and Connector	30 mm / 42 mm	126 Fr x 100 cm (39.4")	1/pk

KRUUSE Replacement Cuff for Silicone Tube

- Easy replacement in the clinic
- Only requires silicone glue

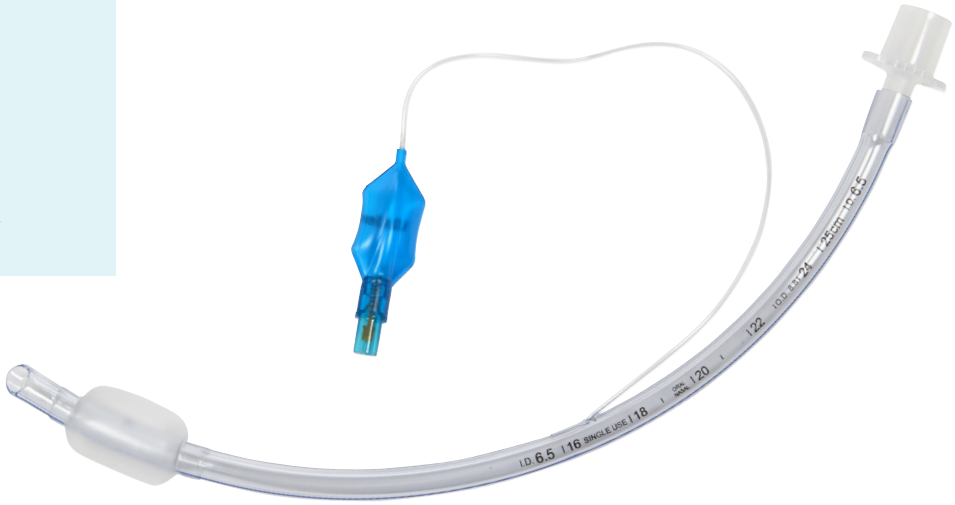
Cat. No	Description	Size, Metric	Package
282201	KRUUSE Replacement Cuff for Silicone Tube	14 mm	1/pk
282211	KRUUSE Replacement Cuff for Silicone Tube	16 mm	1/pk
282221	KRUUSE Replacement Cuff for Silicone Tube	18 mm	1/pk
282231	KRUUSE Replacement Cuff for Silicone Tube	20 mm	1/pk
282241	KRUUSE Replacement Cuff for Silicone Tube	22 mm	1/pk
282251	KRUUSE Replacement Cuff for Silicone Tube	24 mm	1/pk
282261	KRUUSE Replacement Cuff for Silicone Tube	26 mm	1/pk
282271	KRUUSE Replacement Cuff for Silicone Tube	28 mm	1/pk
282281	KRUUSE Replacement Cuff for Silicone Tube	30 mm	1/pk

KRUUSE PVC Endotracheal Tubes

KRUUSE PVC Endotracheal Tubes are made of polyvinyl chloride. They are transparent, rigid and softening at body temperature to conform to airway anatomy.

These cuffed ET tubes are high-volume, low-pressure cuffs with a radiopaque line throughout the entire tube. Like all KRUUSE ET Tubes, they have a Murphy eye.

- Transparent material
- Single use
- Economic
- Hygienic
- Kink resistance
- Softens at body temperature
- Radiopaque line
- High-volume, low-pressure cuff



Cat. No	Description	Type	Size, Metric ID/OD	Size, Imperial	Package
272400	KRUUSE PVC ET Tube w. Connector	wo. Cuff	2.5 mm / 3.5 mm	11 Fr x 16.5 cm (6.5")	10/pk
272401	KRUUSE PVC ET Tube w. Connector	wo. Cuff	3.0 mm / 4.2 mm	13 Fr x 16.5 cm (6.5")	10/pk
272402	KRUUSE PVC ET Tube w. Connector	wo. Cuff	3.5 mm / 4.9 mm	15 Fr x 18.5 cm (7.3")	10/pk
272403	KRUUSE PVC ET Tube w. Connector	wo. Cuff	4.0 mm / 5.5 mm	17 Fr x 21.5 cm (8.5")	10/pk
272404	KRUUSE PVC ET Tube w. Connector	w. Cuff	4.5 mm / 6.2 mm	19 Fr x 23 cm (9")	10/pk
272405	KRUUSE PVC ET Tube w. Connector	w. Cuff	5.0 mm / 6.9 mm	21 Fr x 25 cm (9.8")	10/pk
272406	KRUUSE PVC ET Tube w. Connector	w. Cuff	5.5 mm / 7.5 mm	23 Fr x 27.5 cm (10.8")	10/pk
272407	KRUUSE PVC ET Tube w. Connector	w. Cuff	6.0 mm / 8.2 mm	25 Fr x 29.5 cm (11.6")	10/pk
272408	KRUUSE PVC ET Tube w. Connector	w. Cuff	6.5 mm / 8.8 mm	26 Fr x 30 cm (11.8")	10/pk
272409	KRUUSE PVC ET Tube w. Connector	w. Cuff	7.0 mm / 9.6 mm	29 Fr x 31 cm (12.2")	10/pk
272410	KRUUSE PVC ET Tube w. Connector	w. Cuff	7.5 mm / 10.2 mm	31 Fr x 32 cm (12.6")	10/pk
272411	KRUUSE PVC ET Tube w. Connector	w. Cuff	8.0 mm / 10.9 mm	33 Fr x 33.5 cm (13.2")	10/pk
272412	KRUUSE PVC ET Tube w. Connector	w. Cuff	8.5 mm / 11.5 mm	35 Fr x 33.5 cm (13.2")	10/pk
272413	KRUUSE PVC ET Tube w. Connector	w. Cuff	9.0 mm / 12.1 mm	36 Fr x 33.5 cm (13.2")	10/pk
272414	KRUUSE PVC ET Tube w. Connector	w. Cuff	9.5 mm / 12.7 mm	38 Fr x 33.5 cm (13,2")	10/pk
272415	KRUUSE PVC ET Tube w. Connector	w. Cuff	10.0 mm /13.6 mm	41 Fr x 33.5 cm (13.2")	10/pk
272416	KRUUSE PVC ET Tube w. Connector	w. Cuff	10.5 mm /14.0 mm	42 Fr x 33.5 cm (13.2")	10/pk
272417	KRUUSE PVC ET Tube w. Connector	w. Cuff	11.0 mm /14.7 mm	44 Fr x 33.5 cm (13.2")	10/pk

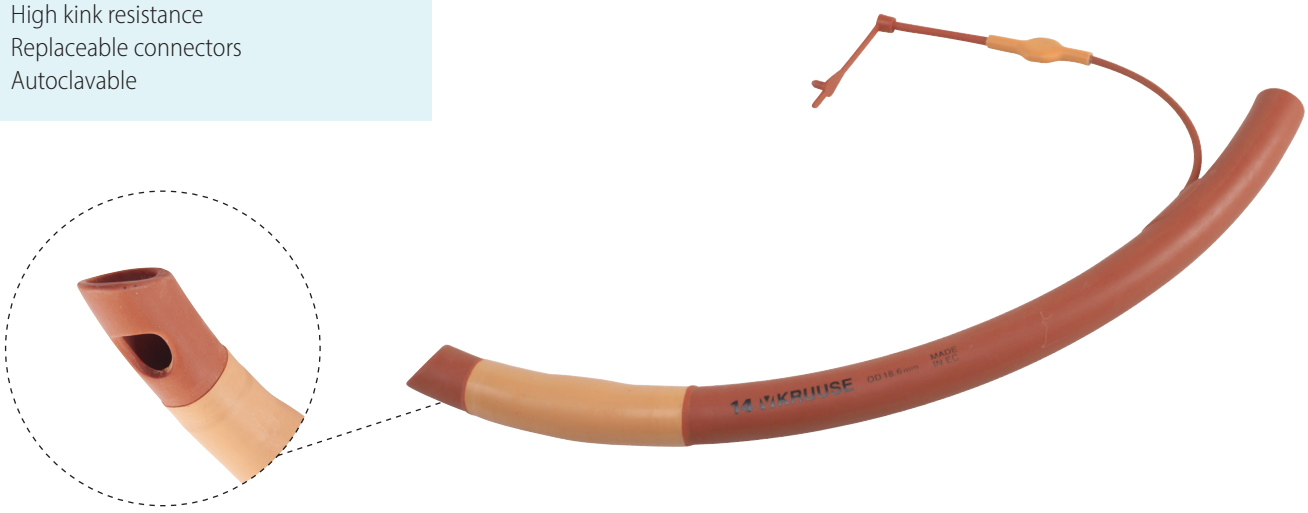
wo. =without cuff w. =with cuff

KRUUSE Red Rubber Endotracheal Tubes

KRUUSE Red Rubber ET Tubes with Murphy eye are available with or without connector.

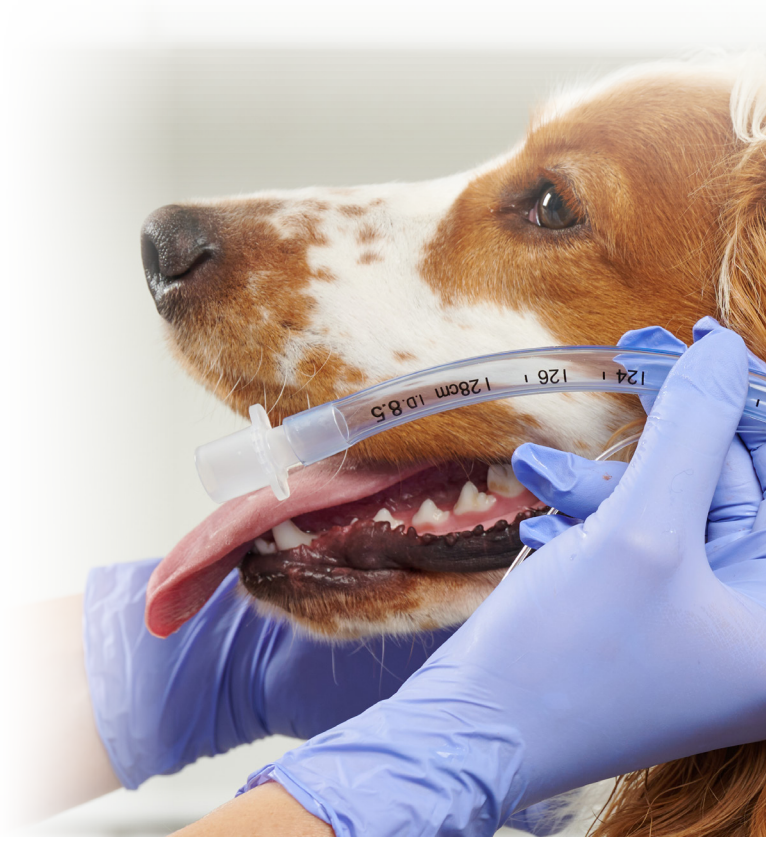
They are made of rigid rubber material, that prevents kinking and allows repeated use, disinfection and sterilization by autoclave at 134°C.

- High kink resistance
- Replaceable connectors
- Autoclavable



Cat. No	Description	Type	Size, Metric ID/OD	Size, Imperial	Package
272054	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	2.5 mm / 4.0 mm	12 Fr x 14 cm (5.5")	1/pk
272055	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	3.0 mm / 4.6 mm	14 Fr x 16 cm (6.3")	1/pk
272056	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	3.5 mm / 5.2 mm	16 Fr x 16 cm (6.3")	1/pk
272057	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	4.0 mm / 5.8 mm	17 Fr x 20 cm (7.9")	1/pk
272058	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	4.5 mm / 6.4 mm	19 Fr x 22 cm (8.7")	1/pk
272059	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	5.0 mm / 7.0 mm	21 Fr x 24 cm (9.4")	1/pk
272060	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	5.5 mm / 7.7 mm	23 Fr x 27 cm (10.6")	1/pk
272061	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	6.0 mm / 8.4 mm	25 Fr x 28 cm (11")	1/pk
272062	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	6.5 mm / 9.1 mm	27 Fr x 29 cm (11.4")	1/pk
272063	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	7.0 mm / 9.6 mm	29 Fr x 30 cm (11.8")	1/pk
272064	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	7.5 mm / 10.5 mm	31 Fr x 32 cm (12.6")	1/pk
272065	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	8.0 mm / 11 mm	33 Fr x 33 cm (13")	1/pk
272066	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	8.5 mm / 11.7 mm	35 Fr x 33 cm (13")	1/pk
272067	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	9.0 mm / 12.4 mm	37 Fr x 34 cm (13.4")	1/pk
272068	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	9.5 mm / 12.9 mm	39 Fr x 35 cm (13.8")	1/pk
272069	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	10.0 mm / 13.4 mm	40 Fr x 35 cm (13.8")	1/pk
272070	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	10.5 mm / 14.1 mm	42 Fr x 35 cm (13.8")	1/pk
272071	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	11.0 mm / 14.6 mm	44 Fr x 35 cm (13.8")	1/pk
272073	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	12.0 mm / 15.6 mm	47 Fr x 49.5 cm (19.5")	1/pk
272074	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	13.0 mm / 17.1 mm	51 Fr x 50 cm (19.7")	1/pk
272075	KRUUSE Red Rubber ET Tube	w. Cuff. Murphy eye	14.0 mm / 18.6 mm	56 Fr x 50 cm (19.7")	1/pk

KRUUSE Connector for Endotracheal Tube



Cat. No	Description	Size, Metric	Size, Imperial	Package
272440	KRUUSE Connector for ET Tube	2.5 mm	12 Fr	5/pk
272441	KRUUSE Connector for ET Tube	3.0 mm	14 Fr	5/pk
272442	KRUUSE Connector for ET Tube	3.5 mm	16 Fr	5/pk
272443	KRUUSE Connector for ET Tube	4.0 mm	17 Fr	5/pk
272444	KRUUSE Connector for ET Tube	4.5 mm	19 Fr	5/pk
272445	KRUUSE Connector for ET Tube	5.0 mm	21 Fr	5/pk
272446	KRUUSE Connector for ET Tube	5.5 mm	23 Fr	5/pk
272447	KRUUSE Connector for ET Tube	6.0 mm	25 Fr	5/pk
272448	KRUUSE Connector for ET Tube	6.5 mm	27 Fr	5/pk
272449	KRUUSE Connector for ET Tube	7.0 mm	29 Fr	5/pk
272450	KRUUSE Connector for ET Tube	7.5 mm	31 Fr	5/pk
272451	KRUUSE Connector for ET Tube	8.0 mm	33 Fr	5/pk
272452	KRUUSE Connector for ET Tube	8.5 mm	35 Fr	5/pk
272453	KRUUSE Connector for ET Tube	9.0 mm	37 Fr	5/pk
272454	KRUUSE Connector for ET Tube	9.5 mm	39 Fr	5/pk
272455	KRUUSE Connector for ET Tube	10.0 mm	40 Fr	5/pk
272456	KRUUSE Connector for ET Tube	10.5 mm	42 Fr	5/pk
272457	KRUUSE Connector for ET Tube	11.0 mm	44 Fr	5/pk

Guidelines for choosing endotracheal tubes

Choosing an endotracheal tube needs to be done prior to inducing anaesthesia.

Diameter is a good reliable parameter to use, when choosing the ideal size for the endotracheal tube. It is recommended to select three sizes for each patient, one matching the trachea size, one smaller and one larger size to be sure to have the right size at hand.

Body weight (see chart below) can help to estimate your choice of endotracheal tube. However, this method may be misleading, especially for brachycephalic breeds or overweight patients. The brachycephalic breeds tend to have narrow airways, and bodyweight might not be a reliable guide in these patients.

Length: The distal end should not extend past the point of the shoulder, and the proximal end should not extend past the incisor teeth. Once in place, the tip of the tube should be located midway between the larynx and the thoracic inlet. Keep in mind mechanical dead space gas can be the result of an excessively long endotracheal tube, as it might encourage rebreathing.

A tube inserted too far can enter the right or left main bronchus. This results in ventilation of a single lung and can result in collapse of the contralateral lung and cause hypoxia.

Size, inner diameter, mm	Cuffed and/or uncuffed	Approximate body weight, kg
2.0, 2.5, 3.0	Cuffed and uncuffed	1-2.5
3.5, 4, 4.5	Cuffed and uncuffed	2.5-5
5, 6, 7	Cuffed and uncuffed	4-9
7, 8, 9	Cuffed	7-15
9, 10	Cuffed	15-25
11, 12	Cuffed	25-45
14, 16	Cuffed	>40

Use table as a guideline only.

Placement technique for intubating dogs and cats

1. Select endotracheal tube
   a. Pre-measure length and diameter (against the animal from outside)
   b. Check inflation of cuff by leaving it for 10 minutes to check for leaks - or check under water
   c. Check cleanliness of tube
   d. Ensure that the connector is in place at the end of the tube to connect to the breathing system
   e. If using PVC tubes, one might want to soften the material in warm water before placement
2. Lubricate the tube end with water or a small amount of sterile lubricant (water-soluble such as KY gel)
3. Patient must be positioned in sternal recumbency (or as pathology dictates)
4. Assistant to grasp the upper jaw and extend the head and neck towards the operator (Be careful not to place fingers in the mouth)
5. Gently pull the patient's tongue out of the mouth with a gauze pad
6. The laryngoscope blade (or endotracheal tube) should be used to depress the tongue and visualise the larynx.
   It should NOT be used to depress the epiglottis directly as the pressure may cause swelling of the epiglottis
7. As cats are prone to laryngospasm, the larynx may be sprayed with lidocaine at this stage.
   Let it work for 30-60 seconds to have the larynx desensitised
8. Pass the endotracheal tube through the glottis and into the trachea until the tip is midway between the larynx and thoracic inlet
9. In cats, if the larynx is closed, it is preferable to wait for inhalation before inserting the tube
10. The endotracheal tube should be advanced over the epiglottis, keeping to the ventral aspect and depressing the epiglottis.
    Then pass through the arytenoid cartilage and vocal folds into the trachea
11. Check tube placement
    a. Auscultate both sides of the patient's chest for respiratory sounds
    b. Carefully palpate the throat for presence of the tube
12. Using your tie gauze (or tie-strap), tie it around the endotracheal tube behind the adaptor (midway on the gauze), place the gauze behind the canine teeth and tie the strap around the patient's head behind the ears to the upper jaw or the lower jaw depending on the surgical procedure
13. Place the patient in lateral position
14. Confirm placement of the tube in the trachea using one of the following methods:
    a. Hold a piece of cotton wool or tissue paper near the end of the tube to see movement when exhalation air is passing
    b. If connected to a capnograph, it will detect exhaled carbon dioxide
    c. Visualisation of simultaneous movement of the patient's thorax and reservoir bag of the breathing system
15. Connect the endotracheal tube to the inhalation anaesthesia machine, respirator, or Ambu-bag
16. Inflate the cuff with sufficient air. No more than 3 ml of air for a feline patient and no more than 6 ml of air for a canine patient.
    If it takes more air, consider replacing with a larger tube. ALWAYS measure the cuff-pressure to be sure not to over-inflate

NB: While monitoring the anaesthesia of a patient do not forget to monitor the endotracheal tube.

1. Does the cuff remain inflated?
2. Are there any kinks in the tube due to changing the patient's position?
3. Is the tube obstructed with secretions?
4. In case you need to move the patient while intubated you MUST temporarily disconnect the endotracheal tube from the breathing tubes.
   This includes, but is not limited to, rolling the patient over, carrying the patient, prepping the patient, and then do not forget to reconnect the breathing tubes. Especially cats have suffered tracheal rupture from twisting the ET tube within the trachea

Potential complications

1. Trauma to mucous membranes of the mouth, soft palate, pharynx, or larynx
2. Tracheal inflammation or necrosis can be caused by over-inflating the cuff or by using excessive force by intubation or extubation
3. Subcutaneous emphysema secondary to tracheal trauma
4. Obstruction of the airway with secretions
5. Inadequate ventilation due to introduction of the endotracheal tube into a a bronchus. Excessive advancement of the endotracheal tube down the airway may result in endobronchial intubation. In such case, one lung receives no ventilation and blood deoxygenation may occur
6. Unintended aspiration via the endotracheal tube
7. Laryngospasm

Supplies for placement:

1. Endotracheal tube in appropriate size (it is always a good idea to have an ET tube one size smaller and one size larger available).
2. Cuffill syringe (cat. no. 272460)
3. Sterile lubricant
4. 3 x 3 gauze pad
5. A trained assistant
6. Suitable ties or gauze to secure endotracheal tube (110869)
7. Laryngoscope or other light source
8. Topical anesthetic solution (for cats)
9. Stylet for small size endotracheal tubes

Cuff pressure

One of the most crucial mistakes related to intubation is over-inflating the cuff. It is of high importance to measure the pressure of the cuff regularly. Always avoid excessive pressure in the cuff, as this will occlude the blood supply to the tracheal mucosa and potentially cause tissue necrosis.

Aim for a cuff pressure between 20-25 mmHg
We have excellent tools available for cuff pressure measurement allowing us to ensure that the pressure does not exceed 25 mmHg.

Cat. No	Description	Package
272460	AG Cuffill	1/pk

Cleaning and sterilising

It is recommended to do the initial cleaning of the endotracheal tube as soon as possible after extubation

A gentle scrub of the inside and outside using a mild soap followed by a warm water rinse is usually enough to remove any blood, mucus, or debris. Something as small as a mucous plug in some tubes is enough to obstruct breathing. Using a pipe cleaning brush will work well for the inside of the tube. Inflating the cuff slightly during the cleaning will help remove debris around the folds of the cuff.

If it is not possible to clean the tube right away, you should soak it with the cuff inflated in a dish of soapy water until you have time to properly finish the cleaning. Buy appropriate brushes for the different tube sizes.

After the initial cleaning disinfect the endotracheal tube with either chlorhexidine or glutaraldehyde. Glutaraldehyde is the active ingredient found in Cidex. The endotracheal tube should be completely submerged in either solution for no longer than 30 minutes. After soaking, thoroughly rinse with water and allow to air dry.

Once completely dry the endotracheal tubes should be sterilised. The endotracheal tube material and the manufacturer of the endotracheal tube will dictate how to sterilise. Most silicone tubes can be heat sterilised by autoclave. PVC tubes can be gas sterilised with ethylene oxide. Always check with the manufacturer prior to sterilising.

Face masks

In anaesthesia cases where intubation is not ideal, a face mask, also know as an induction mask, is a good option. The mask can either be used to facilitate anesthetic induction before intubation, as inhalation anaesthesia maintenance, or as oxygen source pre or post anaesthesia.

Cat. No	Description	Package
271431	KRUUSE Anaesthesia Induction Mask, Size 0/XXS	1/pk
271432	KRUUSE Anaesthesia Induction Mask, Size 1/XS	1/pk
271433	KRUUSE Anaesthesia Induction Mask, Size 2/S	1/pk
271434	KRUUSE Anaesthesia Induction Mask, Size 3/M	1/pk
271435	KRUUSE Anaesthesia Induction Mask, Size 4/L	1/pk
271436	KRUUSE Anaesthesia Induction Mask, Size 5/XL	1/pk

Face masks key points

- Veterinary face masks are available in various shapes and sizes. They should cover the patients nose and mouth, providing an airtight seal.
- Masks manufactured in transparent materials are preferable, to be able to visualise the patient's tongue and mucous membranes.
- Masks with detachable rubber diaphragm usually provide a good seal around the face, but it is important to choose the correct size, to ensure proper fit avoiding leakage and not to create unintended pressure and reduction in venous return causing oedema of the muzzle
- Dead space should be minimised by choosing correct mask shape and size. Avoid using a conical shaped mask for cats
- It often requires sedation to tolerate induction masks
- Masks do NOT protect airways from aspiration of foreign materials
- Should be cleaned prior to use by different patients

Replacement Diaphrams

Cat. No	Description	Package
271412	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 0/XXS	1/pk
271413	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 1/XS	1/pk
271437	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 2/S	1/pk
271438	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 3/M	1/pk
271439	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 4/L	1/pk
271449	KRUUSE Diaphram, f/anaesthetic, Induction Mask, Size 5/XL	1/pk

Intubation vs. face masks

Advantages of intubation, compared to face masks

Endotracheal tubes (with inflated cuff):

- Provide a method of inflating the lungs. Face masks can result in dilation of the stomach with gas
- Prevent aspiration of foreign material such as saliva, stomach content, blood, dental debris etc. into the lungs
- Better maintenance of gas volumes and/or gas exchange in the breathing systems than face masks
  Especially when using ventilator
- Less atmospheric pollution than face masks
- Possible to secure with ties. Face masks can be challenging to secure

Possible complications of endotracheal intubation

Endotracheal tubes may:

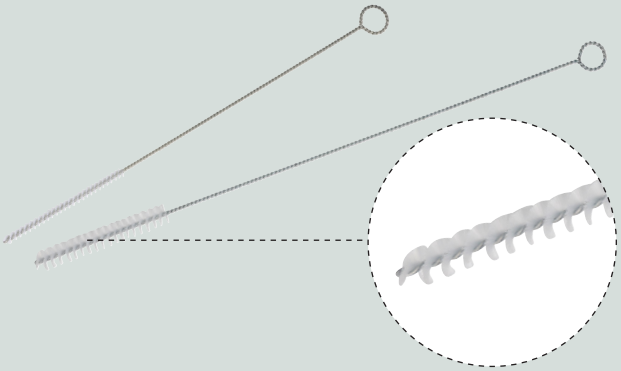
- Be inserted into the esophagus
- Be inserted into main bronchus
- Kink or become obstructed
- Become disconnected
- Damage trachea or larynx and/or initiate laryngospasm
- Cause tracheal rupture if not disconnected prior to movement
- Be chewed and damaged by the patient

The cuff may:

- Herniate over bevel and cause obstruction
- Deflate during anaesthesia
- Cause tracheal necrosis if over-inflated

Accessories

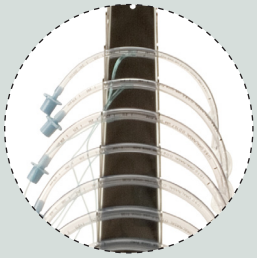
KRUUSE Cleaning Brush for Endotracheal Tubes



Cat. No	Description	Package
271706	KRUUSE Cleaning Brush for ET Tubes, S	1/pk
271707	KRUUSE Cleaning Brush for ET Tubes, M	1/pk
271708	KRUUSE Cleaning Brush for ET Tubes, L	1/pk

KRUUSE Holder for Endotracheal Tubes

Wall mount for ET tubes, small animal.



- Easy overview
- Ideal drying after use and cleaning
- Capacity up to 16 tubes

Cat. No	Description	Package
271705	KRUUSE Holder for Endotracheal Tubes	1/pk

KRUUSE Tie-strap for Endotracheal Tubes

Cat. No	Description	Package
110869	KRUUSE Tie-strap for Endotracheal Tubes	100/pk

References and further reading:

BSAVA Manual of Canine and Feline Anaesthesia and Analgesia
Manual of Clinical Procedures in the Dog, Cat & Rabbit - Crow and Walshaw
Anaesthesia for Veterinary Technicians - Bryant
Small Animal Physical Diagnosis and Clinical Procedures - McCurnin and Poffenbarger
Veterinary Nursing - Lane and Cooper