

Information for Clinical Choice Matrix and Support Document

Tracheostomy Heat and Moisture Exchange and Heat and Moisture Exchange Filters

Information for Clinical Choice (ICC) has been developed to assist clinicians in the decision-making process when assessing the suitability of a product by providing a clear illustration and description of the features of a range of similar products supplied through NHS Supply Chain. The criteria provided, in the form of a Product Matrix and Support Document, is the result of a product review, conducted by DHLs Clinical Collaboration Team (CCT), with support from clinical stakeholders from across the NHS.





The aim, alongside delivering savings back into NHS frontline services, is to ensure that clinical choice remains at the forefront of any product switching decision.


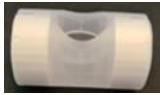

Airways Management: Tracheostomy Heat and Moisture Exchange and Heat and Moisture Exchange Filters

Tracheostomy Humidification











Artificial humidification is utilised when a tracheostomy is in situ to condition inhaled air, maintain lower airway function and minimise the viscosity of secretions. The HME is designed to replicate the functions of the upper airway conserving the patient's own expired heat and moisture and returning these to the patient during inspiration. The device connects in-line with a patient's tracheostomy to capture the patient's exhaled heat and moisture so that they can be used to heat and humidify gases inspired by the patient; some may include a microbial filter. Commonly known as a heat and moisture exchanger (HME) or an "artificial nose".





Tracheostomy HME				
Suppliers	Armstrong Medical Ltd	Atos Medical	Atos Medical	Smiths Medical International Ltd
Brand	Pharma Trach Basic	Freevent Xtracare	Freevent Xtracare	Portex
MPC	PHFT6240	7768	7767	100/570/015
NPC	FDC913	FDB1195	FDB1194	FDG950
Description	Adult HME	Adult HME with Filtration and Optional Oxygen Capability	Adult HME with Filtration and Optional Oxygen Capability	Adult HME with Optional Oxygen Capability
Picture				
Route	Blue Diamond	Blue Diamond	Blue Diamond	Stocked
UOI	25	1	1	50
Recommended max duration of use	24 hours	24 hours	24 hours	24 hours
Sterile	✗	✗	✗	✓
Dead Space (ml)	12 ml	5.5 ml	5.5 ml	11 ml
Mass of moisture loss of the HME (mg H2O/L @Vt 500ml)	Not tested	12.4	12.4	13
Mass of moisture output (mgH2O/L @Vt 500ml)	26	Not tested	Not tested	25
Speaking valve present	✗	✗	✗	✗
Flow resistance product & pressure by H2O at 30L Pre conditioning (ISO 9360)	0.7 cmH2O	0.88 cmH2O	0.88 cmH2O	0.9 cmH2O
Tidal volume range	N/A	>36.5 ml	>36.5 ml	1000ml
Sealing suction port	✗	N/A	N/A	✗
Suitable for paediatrics	✓	✓	✓	✓
Filter Material	Foam	Foam	Foam	Paper
Weight (g)	4 g	3.2 g	3.2 g	5 g
Country of Manufacture	Sweden	Sweden	Sweden	Czech Republic

Tracheostomy HME Suction			
Suppliers	Teleflex Medical (Rusch & Pilling Weck)	Teleflex Medical (Rusch & Pilling Weck)	Vyaire Medical Products Ltd
Brand	Gibeck Trach Vent	RUSCH- GILBECK Humid- Vent	Airlife
MPC	41112	41111	003014
NPC	FTC008	FDC1100	FTC2031
Description	Adult HME with Suction Capability	Adult HME with Suction Capability	Adult HME with Suction Capability
Picture			
Route	Stocked	eDirect	Blue Diamond
UOI	1	50	50
Recommended max duration of use	24 hours	24 hours	24 hours
Sterile	✗	✓	✓
Dead Space (ml)	10 ml	10 ml	16 ml
Mass of moisture loss of the HME (mg H2O/L @Vt 500ml)	8.4	8.4	13.8
Mass of moisture output (mgH2O/L @Vt 500ml)	32.42	29.2	25.5
Speaking valve present	✗	✗	✗
Flow resistance product & pressure by H2O at 30L Pre conditioning (ISO 9360)	0.25 cmH2O	0.25 cmH2O	Not available
Tidal volume range	50 ml - 1000ml	50 ml - 1000ml	70 ml - 1000ml
Sealing suction port	Yes - Passive	Yes - Passive	Yes - Active
Suitable for paediatrics	✓	✓	✓
Filter Material	Paper	Paper	Foam
Weight (g)	4.67 g	4.67 g	6 g
Country of Manufacture	Malaysia	Malaysia	China



Tracheostomy HME Suction and Oxygen										
Suppliers	Armstrong Medical Ltd	Atos Medical	Atos Medical	GVS	Healthcare 21 Uk Ltd	Intersurgical Ltd	Smiths Medical International Ltd	Teleflex Medical (Rusch & Pilling Weck)	Teleflex Medical (Rusch & Pilling Weck)	Vyaire Medical Products Ltd
Brand	Pharma multi-function	Freevent Trachphone	Freevent Trachphone	Trachael	Covidien	Inter-Therm™ T+ HME range	Portex	Gibeck Trach Vent +	Gibeck Trach Vent +	Edithtrach
MPC	PHFT6241	7704-50	7707	9500/01	353/19004	1875000	100/570/022	41312	41311U	557005000
NPC	FDC914	FDB1193	FDB1192	FDC1494	FTC458	FTC696	FTC242	FTC355	FSM2809	FTC306
Description	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability	Adult HME with Suction and Oxygen Capability
Picture										
Route	Blue Diamond	Blue Diamond	Blue Diamond	eDirect	eDirect	Blue Diamond	Stocked	Blue Diamond	eDirect	Blue Diamond
UOI	25	50	30	50	25	25	50	50	50	40
Recommended max duration of use	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours
Sterile	✗	✗	✗	✗	✓	✗	✓	✗	✓	✗
Dead Space (ml)	12 ml	9.5 ml	9.5 ml	8 ml	16 ml	19 ml	11 ml	10 ml	10 ml	16 ml
Mass of moisture loss of the HME (mg H2O/L @Vt 500ml)	Not tested	Not tested	Not tested	15	11	13.1	12	8.4	8.4	13.5
Mass of moisture output (mgH2O/L @Vt 500ml)	26	20.5	20.5	27	28.5	26.1	25	32.42	29.2	24
Speaking valve present	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗
Flow resistance product & pressure by H2O at 30L Pre conditioning (ISO 9360)	0.7 cmH2O	0.3 cmH2O	0.3 cmH2O	0.36 cmH2O	0.7 cmH2O	0.4 cmH2O	0.3 cmH2O	0.2 cmH2O	0.25 cmH2O	0.03 cmH2O
Tidal volume range	N/A	50 ml - 1000 ml	50 ml - 1000 ml	>25 ml	300ml - 1500 ml	>60 ml	70 ml – 1000 ml	50 ml – 1000 ml	50 ml - 1000ml	60 ml - 1000ml
Sealing suction port	Yes - Passive	Yes - Passive	Yes - Passive	Yes - Passive	Yes - Active	Yes - Active	Yes - Active	Yes - Passive	Yes - Passive	Yes - Passive
Suitable for paediatrics	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓
Filter Material	Foam	Foam	Foam	Foam	Paper	Paper	Paper	Paper	Paper	Foam
Weight	4 g	2.9 g	2.9 g	4.4 g	8.5 g	9 g	7.5 g	6.62 g	6.3 g	6 g
Country of Manufacture	Sweden	Sweden	Sweden	UK	Italy	Lithuania	Mexico	Malaysia	Malaysia	China



Tracheostomy HME Suction and Oxygen with Tubing		
Suppliers	Flexicare Medical Ltd	Teleflex Medical (Rusch & Pilling Weck)
Brand	Thermotrach	Gibeck Trach Vent +
MPC	038-41-250T	41322
NPC	FDH787	FDC3573
Description	Adult HME with Suction and Oxygen Capability with Oxygen Tubing	Adult HME with Suction and Oxygen Capability with Oxygen Tubing
Picture		
Route	eDirect	Blue Diamond
UOI	50	50
Recommended max duration of use	24 hours	24 hours
Sterile	✗	✗
Dead Space (ml)	-	10 ml
Mass of moisture loss of the HME (mg H2O/L @Vt 500ml)	11.4	8.4
Mass of moisture output (mgH2O/L @Vt 500ml)	26.5	32.42
Speaking valve present	✗	✗
Flow resistance product & pressure by H2O at 30L Pre conditioning (ISO 9360)	0.48 cmH2O	0.25 cmH2O
Tidal volume range	>70 ml	50 ml - 1000ml
Sealing suction port	Yes - Passive	Yes - Passive
Suitable for paediatrics	✓	✓
Filter Material	Foam	Paper
Weight	6.4 g	6.62 g
Country of Manufacture	UK	Malaysia

Mass of moisture loss

The manufacturer or supplier must supply the moisture loss, in milligrams water per litre of air and expressed to the nearest milligram as tested by stated ISO test conditions. These are within the operating range of the HME as specified by the manufacturer, and at the minimum and maximum tidal volumes recommended by the manufacturer, this is to avoid the inspissation (thickening) of secretions.¹

Mass of moisture output

Heat and moisture output during expiration and made available / returned to inspired gases during subsequent inspiration.

Dead space

Heat and moisture exchangers and filters add to the dead space of the breathing system when they are connected between the patient and the breathing system, so that a greater proportion of the exhaled carbon dioxide is returned in the next breath.

This is identified through the size of the internal volume of the HME.

Generally, the dead space of the HME should be as small as possible in order that no detriment to the work of breathing is experienced by the patient. For some patients with small lung volumes (young children or patients with severe pulmonary disease), it is even more important that the dead space is reduced to its minimum.²



References:

1. Cramer,D.& Ward,S. BACTERIAL/VIRAL FILTERS IN PULMONARY FUNCTION DEPARTMENTS. Accessed 24th July 2020.
<http://www.wales.nhs.uk/sitesplus/documents/861/bacterial%20viral%20filter%20info.pdf>
2. Wilkes, A.R. 2010. Heat and moisture exchangers and breathing system filters: their use in anaesthesia and intensive care. Part 1 – history, principles and efficiency. Accessed 24th July 2020. <https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2044.2010.06563.x>

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