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**Department of Agriculture,
Water and the Environment**

Ministry for Primary Industries
Manatū Ahu Matua



Spray rates listing for flights into Australia and New Zealand

Version 3.8

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Version control

Updates will occur automatically on the Department of Agriculture (the department) and New Zealand Ministry for Primary Industries (MPI) websites and this page will summarise the amendments as they occur. The specific sections updated are described below:

Version	Date	Author	Description of change	Sections
-	1998 - 2008	AQIS MAFBNZ	First issue	All
1.0	October 2009	Aimie Wilkinson and Doug Farr	Review	All
2.0	September 2012	DAFF/MPI	Review	All
2.1	June 2013	DAFF	Branding changes	All
2.2	December 2013	Department of Agriculture	Branding update Amendment to military spray rates	All Amendment to section 3.3
2.3	May 2014	Traveller and Vessels Section/MPI	Amend spray rates for Dash 8-400 & Fokker aircrafts	3.2
2.4	September 2015	Travellers and Vessels Section /MPI	Inclusion of new spray rates for Military Aircrafts	3.3
3	June 2016	Travellers and Vessels section/MPI	Review and update for new biosecurity legislation	All (apart from spray rates)
3.1	February 2017	Traveller and Vessels section/MPI	Addition of Alenia C27J Spartan Review of spray rates Review of full document for accessibility	Table 34 All
3.2	December 2018	Conveyances and Ports Section/MPI	Updated table 22 P-8A Poseidon and added a footnote	3
3.3	April 2019	Conveyances and Ports Section	Updated the A350-900 'Forward hold 2% d-phenothrin & 2% permethrin (grams)' spray rate	Table 2
3.4	October 2019	Conveyances and Ports Section/MPI	Updated: General formatting Smoke detector advice Spraying of compartments advice	All 2 and 3 4
3.5	January 2020	Conveyances and Ports Section/MPI	Updated B-52 Stratofortress (bomber) Bomb area is exempt from disinsection. Updated departments name	Table 22
3.6	June 2020	Conveyances and Ports Section/MPI	Add "spray rate also applies to on arrival spraying" to all Cabin TOD columns.	All Tables
3.7	June 2020	Conveyances and Ports Section/MPI	Add 3 to the rear hold spray for the Embraer 120.	Table 13

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3.8	October 2020	Conveyances and Ports Section/MPI	Note 1: Applies to Passenger configured aircraft carrying cargo	Note 1: under Cargo section, page 2
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Introduction

This document has been prepared in cooperation between the Department of Agriculture (the department) and the Ministry for Primary Industries (MPI) for the regulation of disinsection requirements of aircraft flying into Australia and New Zealand.

International aircraft are disinfected to help protect Australia and New Zealand from potential disease vectors and harmful pests. This listing has been jointly developed by the department and MPI incorporating the latest recommendations and practices from the [World Health Organization \(WHO\)](#).

Airlines will need to contact MPI to ensure product acceptance in New Zealand. Disinsection products used within New Zealand must also be registered with the [\(Environmental Protection Authority \(EPA New Zealand\)\)](#).

Airlines will need to ensure that products used in Australia are registered by the [Australian Pesticide and Veterinary Medicine Authority \(APVMA\)](#). This may affect spray on arrival aircraft or aircraft that have not met Australia's disinsection requirements and are required to perform spray on arrival under the supervision of departmental officers.

It is the airlines responsibility to ensure the aerosol products used meet all aviation and aircraft manufacturers technical and safety requirements, the WHO and [International Civil Aviation Organization \(ICAO\) guidelines](#), As well as meeting the department's and MPI requirements.

Aerosol products used for entry into both Australia and New Zealand must be fit for purpose and contain the following active ingredients for each treatment type listed in Table 1.

Table 1 Treatment and active ingredients

Treatment	Active Ingredients
Pre-embarkation	2% permethrin
Pre-flight	2% permethrin
Top of descent	2% d-phenothrin
On-arrival	2% d-phenothrin (use the TOD column for cabin spray-on-arrival (SOA) amounts)
Holds	2% d-phenothrin and 2% permethrin
Touch ups	2% permethrin

As a minimum requirement, all aerosol cans, must be clearly labelled, in English, with a list of all active ingredients used. Alternatively, they must be accompanied with an English version of the MSDS (material safety data sheet) for each product used.

This document must be read in conjunction with the [Schedule of aircraft disinsection procedures for flights into Australia and New Zealand](#).

Rate and method of application

Spray rates apply to all aircraft series, unless otherwise stated.

Use the [Spray rates calculator tool](#) found on the department's website if aircraft model is not listed, or contact the [department](#) or [MPI](#) for additional information.

Cabin

The rate of application for cabin spray is based on 10 grams per 1000 cubic feet and is typically achieved by discharging aerosols while walking at the rate of one step or row of seats per second. Wide-bodied aircraft may require operator to use up to two cans per aisle.

Cabin spray typically discharges at the rate of one gram per second; therefore each 100 grams can take approximately 100 seconds to fully discharge - knowing this can help operator achieve even coverage.

Note 1: Some passenger aircraft transport freight in the main cabin, if the aircraft is not configured with cargo doors on the main deck continue to treat this aircraft as a passenger aircraft. Cargo should not obstruct access to cabin areas that will prevent normal and correct disinsection treatment to all required cabin spaces and surfaces.

Note 2: For a SOA aircraft, please use the cabin spray amounts detailed in the Cabin TOD columns.

Hold(s)

Unless otherwise specified, hold spray rates have been rounded up to the nearest 150 grams standard one-shot aerosol for holds.

When amounts of less than 150 grams of hold spray are specified for either hold, an applicator may choose to either:

- Use the full 150 grams size can(s) and proceed as usual; or
- Fit a multi-shot nozzle to the can(s) used and apply the spray manually via the pressure hatches after hold doors are closed. When there are no pressure hatches, operators may direct the spray via an opening through a nearly closed hold door, being careful to avoid any spray loss to the exterior of the aircraft.

Any additional baggage cavities not mentioned, such as small nose cone storage areas on private aircrafts are to be sprayed for a minimum of 2 seconds each.

General requirements

Any exhausted or partly exhausted can(s) used must travel on board the aircraft and will be subject to verification checks on-arrival, as required.

Spray rates listing

This listing has been divided into four aircraft types:

- [Section 1- Commercial Passenger Aircraft](#)
- [Section 2- Small Jets, Regional and Private Aircrafts \(including Private Helicopters\)](#)
- [Section 3- Military Aircraft](#)
- [Section 4- Freighter Aircraft](#)

1 Commercial passenger aircraft

Table 2 Spray rates, commercial passenger aircraft—Airbus

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
A300	200	200	150	150
A310	200	200	150	150
A318	70	70	15	25
A319	70	70	15	30
A320	100	100	25	40
A321	100	100	35	50
A330-200	200	200	150	150
A330-300	300	300	150	150
A340-200	200	200	150	150
A340-300/500	300	300	150	150
A340-600	300	300	300	300
A350-800	300	300	150	150
A350-900	300	300	150	150
A350-1000	300	300	150	150
A380	500	500	300	300

Table 3 Spray rates, commercial passenger aircraft—Boeing

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
BBJ	70	70	15	25
BBJ2	100	100	30	30
Boeing 727-100	100	100	30	30
Boeing 727-200	60	60	20	20
Boeing 737-100	60	60	30	40
Boeing 737-200	60	60	15	20
Boeing 737-300	60	60	20	25
Boeing 737-400	70	70	25	30
Boeing 737-500	60	60	15	25
Boeing 737-600	60	60	20	25
Boeing 737-700	70	70	15	25
Boeing 737-800	100	100	30	30
Boeing 737-900	100	100	30	30
Boeing 747	400	400	300	300
Boeing 747 SP	300	300	150	150
Boeing 757	100	100	40	40

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Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Boeing 767	200	200	150	150
Boeing 777	300	300	300	300
Boeing 787-300	300	300	150	150
Boeing 787-800	300	300	150	150
Boeing 787-900	300	300	150	150
Boeing 787-10	300	300	150	150

Table 4 Spray rates, commercial passenger aircraft—Bombardier

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
CRJ 900	40	40	20	10

Table 5 Spray rates, commercial passenger aircraft—British Aerospace

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Bae146- 100/200/300	50	50	20	10
	50	50	5 a	5 a

a Electronic and equipment bay and hydraulics bay, adjacent to the holds.

Table 6 Spray rates, commercial passenger aircraft—Embraer

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
170 E-Jet	40	40	15	10
175 E-Jet	45	45	15	10
190 E-jet	50	50	20	20
195 E-jet	55	55	20	20

Table 7 Spray rates, commercial passenger aircraft—McDonnell Douglas

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
DC 8 – Series 60/70	100	100	40 a	40 a
DC9	50	50	150	150
DC10	200	200	150	150
MD11	200	200	150	150
MD80	100	100	150	150
MD81	100	100	20 b	20 b
MD82	100	100	20 b	20 b
MD83	100	100	20 b	20 b
MD87	100	100	20 b	20 b
MD88	100	100	20 b	20 b
MD90	100	100	150	150

a Most of these holds have four belly holds. Spray at 40 grams per hold.

b These aircraft typically have forward, centre and rear holds. Spray at 20 grams per hold.

Table 8 Spray rates, commercial passenger aircraft—Tupolev

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
TU-134	70	70	30	30
TU-154	70	70	30	30

2 Small jets, regional and private aircraft (including private helicopters)

Where holds can be accessed internally, these have been added to the spray amount required for the cabin.

Cabin spray delivery rates are one gram/second for both PED and TOD spray. Cabin spray rates have been rounded up to the nearest 5 grams. Unless otherwise specified, the amount of spray required for external holds (seconds discharged) relates to the total number of 'external access only' holds.

If operators use one-shot 2% permethrin and 2% d/phenothrin aerosols to spray the holds on any aircraft, please be aware that excess amounts of spray may activate the on board smoke detectors.

For any holds requiring 20gms of spray or less, it is acceptable to use a 2% permethrin aerosol.

For small one/two seater aircraft (**not listed**), use discretionary amounts of spray estimated on the volume matching the nearest to the aircraft to be treated, where less than 5 grams of spray would be required.

For helicopters or any non-listed aircraft flying or carried on board a vessel, disinsection must be conducted at the following rate, 1 gram of spray (equivalent to 1 second of spraying) per 100 grams cubic feet of internal space.

Table 9 Spray rates, small jets, regional and private aircraft—Bombardier

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Challenger 300	10	10	5	5
Challenger 600	15	15	-	-
Challenger 601	15	15	-	-
Challenger 605	15	15	-	-
Challenger 850	25	25	-	-
Challenger 5000	25	25	-	-
CRJ 200	25	25	-	-
CRJ 700 (CL-6000)	25	25	20	10

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Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d- phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Dash 8 (DHC-8) 100/200	15	15	-	-
Dash 8 (DHS-8) 300	20	20	-	-
Dash 8 (DHC-8) 400	30	30	5	20
Global 5000	25	25	-	-
Global Express	25	25	-	-
Learjet 24	5	5	-	-
Learjet 25	5	5	-	-
Learjet 31	5	5	-	-
Learjet 35	5	5	-	-
Learjet 36	5	5	-	-
Learjet 40	10	10	3	-
Learjet 45	10	10	3	-
Learjet 55	5	5	2	-
Learjet 60	10	10	2	-
Learjet 85	10	10	-	-

Table 10 Spray rates, small jets, regional and private aircraft — Cessna

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Citation I	5	5	2	-
Citation II/SP	5	5	2	-
Citation V	5	5	2	-
Citation VI	5	5	3	-
Citation VII	5	5	3	-
Citation X	10	10	4	-
Citation Bravo	5	5	2	-
Citation CJ1	5	5	3	-
Citation CJ2	5	5	3	-
Citation CJ3	5	5	3	-
Citation CJ4	5	5	4	-
Citation S/II	5	5	2	-
Citation Encore	5	5	2	-
Citation Encore +	5	5	2	-
Citation Excel	5	5	2	-
Citation Jet	5	5	3	-
Citation Mustang	5	5	3	-

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Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Citation Sovereign	10	10	5	
Citation Ultra	5	5	3	
Citation XLS	5	5	3	

Table 11 Spray rates, small jets, regional and private aircraft—Dassault

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Falcon 7x	20	20	-	-
Falcon 10	5	5	2	2
Falcon 50	10	10	5	5
Falcon 100	5	5	2	2
Falcon 900	15	15	-	-

Table 12 Spray rates, small jets, regional and private aircraft—Eclipse

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Eclipse 400/500	5	5	2	2

Table 13 Spray rates, small jets, regional and private aircraft—Embraer

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
120	15	15	-	3
135	20	20	-	-
140	20	20	15	15
145	25	25	-	-
Legacy	15	15	15	15
Legacy 450	15	15	2	2
Legacy 500	15	15	3	3
Legacy 550	15	15	3	3

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Legacy 600	15	15	3	3
Legacy Shuttle	15	15	15	15
Phenom 100/300	5	5	2	2

Table 14 Spray rates, small jets, regional and private aircraft—Fokker

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
F27 Friendship	25	25	- a	- a
F28	30	30	12	7
F50	35	35	- a	- a
F60 – militarised F50	35	35	- a	- a
F70	40	40	12	7
F100	40	40	20	11

a Hold included in cabin

Table 15 Spray rates, small jets, regional and private aircraft—Galaxy Aerospace

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Galaxy	10	10	5	5

Table 16 Spray rates, small jets, regional and private aircraft—Gulfstream

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
GII/GIII		15	-	-
GIV		20	-	-
GV		20	-	-
G100		5	2	2
G150		10	3	3
G200/250		10	5	5
G350/G450/G500/G550		20	-	-
G650		25	-	-

Table 17 Spray rates, small jets, regional and private aircraft—Hawker Beechcraft

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Beechcraft 1900	10	10	-	-
Beechcraft Premier I	5	5	3	3
Hawker 400	5	5	2	2
Hawker 750	10	10	2	2
Hawker 800	10	10	2	2
Hawker 900XP	10	10	2	2
King Air	5	5	2 a	2 a

a Over wing lockers

Table 18 Spray rates, small jets, regional and private aircraft—Honda

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Honda Jet	5	5	2	2

Table 19 Spray rates, small jets, regional and private aircraft—Israel Aircraft Industries

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Astra SP	5	5	3	3
Astra SPX	5	5	3	3
West wind II	5	5	2	2

Table 20 Spray rates, small jets, regional and private aircraft—Pilatus

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
PC - 12 NG	5	5	-	-

3 Military aircraft

Cabin spray delivery rates are one gram/second for both PED and TOD spray.

- Helicopters or any non-listed aircraft flying or carried on board a vessel, disinsection must be conducted at the following rate, 1 gram of spray (equivalent to 1 second of spraying) per 100 cubic feet of internal space.
- For aircraft with tiny interiors such as fighter jets, use discretionary amounts of spray where less than 5 grams of spray would be required.
- If operators use one-shot 2% permethrin and 2% d/phenothrin aerosols to spray the holds on any aircraft, please be aware that excess amounts of spray may activate the on board smoke detectors.
- For any holds requiring 20gms of spray or less, it is acceptable to use a 2% permethrin aerosol.

Table 21 Spray rates, military aircraft—Airbus

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
KC-30/A330 MRTT	200	200	150	150
A400M	150	200	-	-

Table 22 Spray rates, military aircraft—Boeing

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Osprey	15	15	-	-
B-52 Stratofortress (bomber) (a)	200	200	-	-
B7470 Freighter	400	400	300	300
B757	100	100	40	40
C40 (B737-700)	70	100	15	25
KC B767	250	250	150	150
KC-135R Strat tanker	100	100	-	-
P-8A Poseidon (b)	100	100	- b	- b

(a) The B-52 bomb area is exempt from disinsection. The cabin is to be treated and certified as per normal disinsection requirements.

(b) P-8A Poseidon surveillance aircraft forward and aft holds (lobes) only are exempt from disinsection treatment requirements and there is no requirement for the aerosol (used prior to departure) or certification of the treatment of these 2 areas to be presented on arrival. The cabin is to be treated and certified as per normal disinsection requirements.

Table 23 Spray rates, military aircraft—Bombardier

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Learjet C21	5	5	-	-

Table 24 Spray rates, military aircraft—EADS CASA/IPTN

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
CASA CN235	20	20	-	-

Table 25 Spray rates, military Aircraft—Embraer

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
145 AEW	25	25	-	-
C-99A (Transport 145)	25	25	-	-
E-99	25	25	-	-
P-99 (Maritime)	25	25	-	-
R-99	25	25	-	-

Table 26 Spray rates, military aircraft—Fighter Jets – all

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Fighter Jets – all	4	- a	- a	- a

a Fighter jets are exempt from being treated at TOD and there is also no requirement for the partly used aerosol (used prior to departure) to be presented on arrival.

Table 27 Spray rates, military aircraft—Gulfstream

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
C-20 (A/D) Gulfstream III	15	15	-	-
C-20 (G) Gulfstream IV	20	20	-	-
C-37 Gulfstream V	20	20	-	-

Table 28 Spray rates, military aircraft—Hawker Beechcraft

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
C-12	5	5	2 a	2 a

a Over wing lockers

Table 29 Spray rates, military aircraft—Ilyushin

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
IL-62	100	100	-	-
IL-96	300	300	150	150
IL-II 76	200	200	-	-

Table 30 Spray rates, military aircraft—Lock head

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
C5 Galaxy	700 a	700 a	-	-
C130 Hercules	100	100	-	-
F16	5	-	-	-
F16C Viper	5	-	-	-
F22 Raptor	5	-	-	-
MH60R	5	-	2	2
L-101 Tristar	200	200	150	150
P3 Orion	100	100	10 b	10 b

a 600 grams for main deck and 100 grams for upper deck

b Spray bombs via external hatch with 10 grams of pre-spray

Table 31 Spray rates, military Aircraft—McDonnell Douglas

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
C17 Globe master	200	200	-	-

Table 32 Spray rates, military aircraft—Sikorsky

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
UH-60 Blackhawk	5	5	2	2
SH-60 Seahawk	5	5	2	2

Table 33 Spray rates, military aircraft—Northrop Grumman

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
E-2C Hawkeye		20		-
C-2 Greyhound		20		-

Table 34 Spray rates, military aircraft—Leonardo’s Aircraft Division

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d- phenothrin (grams) (spray rate also applies to on arrival spraying)	Forward hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Alenia C-27J Spartan		50	-	-

4 Freighters

When disinsecting the cargo hold on the main deck, extra care will be needed to ensure safe application, due to the higher concentration of combined active ingredients being used in hold formulation aerosols:

- Ensure the aerosol(s) are directed away from your body and walk away from area being disinsected.
- Avoid breathing the mist.
- Vacate the area on completion of spraying and allow at least five minutes for the spray to settle before re-entering.

If an airline is not on a PED agreement Pre-spray is required for galley, toilets, passenger compartments and all areas not treated with hold spray. Top of Descent is required in the passenger compartments

As the amounts of PED and TOD spray may vary depending on the specific configuration of the freighter, apply these sprays by walking at the rate equivalent to one row or step per second.

Table 35 Spray rates, freighter aircraft—Airbus freighters

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Main deck 2% d-phenothrin & 2% permethrin (grams)	Forward Hold 2% d- phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
A300	50	50	300	150	40
A300-600	50	50	300	150	150
A300-600ST	50	50	750	25	25
A310	50	50	300	150	150
A318	50	50	150	15	25
A319	50	50	150	15	30
A320	50	50	150	25	40
A321	50	50	150	35	50
A330-200	50	50	300	150	150
A330-300	50	50	450	150	150
A340-300	50	50	300	150	150
A340-500	50	50	450	150	150
A340-600	50	50	450	300	300
A380	50	50	750	300	300

Table 36 Spray rates, freighter aircraft—Antonov freighters

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Main deck 2% d-phenothrin & 2% permethrin (grams)	Forward Hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Antonov 124	50	50	750	-	-
Antonov 225	50	50	750	-	-

Table 37 Spray rates, freighter aircraft—Boeing freighters

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Main deck 2% d-phenothrin & 2% permethrin (grams)	Forward Hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
Boeing 707-320C	50	50	150	150	150
Boeing 727-100	50	50	150	20	20
Boeing 727-200	50	50	150	30	30
Boeing 737	50	50	150	30	40
Boeing 747-100/200/300/400/800	50	50	600	300	300
Boeing 747 Combi	300 a	300 a	150	300	300
Boeing 757	50	50	150	40	40
Boeing 767	50	50	300	150	150
Boeing 777	50	50	450	300	300
Boeing 787	50	50	450	150	150
KC 135	50	50	150	150	150

a passenger cabin

Table 38 Spray rates, freighter aircraft—McDonnell Douglas freighters

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Main deck 2% d-phenothrin & 2% permethrin (grams)	Forward Hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & 2% permethrin (grams)
DC 8 - Series 60/70 a	15	15	150	40 per hold a	40 per hold a
DC 9	15	15	150	150	150
MD11	15	15	300	150	150

a Most of these aircraft have four belly holds.

Table 39 Spray rates, freighter aircraft—shorts freighters

Aircraft manufacturer and model	Cabin PED 2% permethrin (grams)	Cabin TOD 2% d-phenothrin (grams) (spray rate also applies to on arrival spraying)	Main deck 2% d-phenothrin & 2% permethrin (grams)	Fwd. Hold 2% d-phenothrin & 2% permethrin (grams)	Rear hold 2% d-phenothrin & d% permethrin (grams)
Belfast	50	50	150	-	-