

Munich Airport Aircraft Deicing Plan

Winter Season 2024 / 2025

- Second Version -



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1 Introduction

This document describes the operational procedures for the deicing of aircraft during the annual deicing period. These procedures are intended to provide safe, orderly and efficient deicing of aircraft and access of aircraft and airline vehicles to the designated deicing areas (DA). These procedures have been agreed on between operations department of the "Flughafen München GmbH" (FMG), "EFM - Gesellschaft für Enteisen und Flugzeugschleppen am Flughafen München mbH" (EFM) (responsible for aircraft deicing) and "Deutsche Flugsicherung GmbH" (DFS) (responsible for air traffic control, ATC).

The regulations and procedures established in this Deicing Plan do not replace the deicing procedures published in the German Aeronautical Information Publication Germany (AIP) part Munich. This plan is intended to be primarily used by all airline operations staff for further information and has been published in order to ensure that all regulations and procedures for deicing aircraft at Munich Airport are applied.

This plan will be reviewed annually and published every October prior the new deicing season starts, or if significant changes in procedures occur, an updated version will be published promptly.

Any variations must be authorised in writing by FMG Operations and EFM before implementation.

2 Deicing areas for jet-aircraft

At Munich Airport special areas are assigned for deicing of aircraft. The locations and designations of the deicing areas are depicted in the AIP Germany, part Munich, aerodrome charts. At each runway head deicing areas are assigned for deicing of jet aircraft and propeller driven aircraft (i.e. ATR 42/72) with operative propeller braking. All deicing services with the exception of taxi deicing, engine, underwing, belly, fan-blade and gear deicing will be carried out on these areas only.

The deicing areas are within the area of responsibility of Air Traffic Control (ATC).

Pilots do not need to notify ATC about requested deicing. ATC coordinates and assigns deicing areas with regard to individual start-up of departing flights upon notification of the deicing coordinator.

EFM "München Deicing" does not assign departing aircraft to deicing areas and does not have any influence on start-up sequence.

3 Deicing areas for propeller driven aircraft

With exception of propeller driven aircraft with operative propeller braking (see "2 Deicing areas for jet-aircraft") propeller driven aircraft are deiced on ramp 1, 2, 3, 5, 6, 7, 8, 9, 12,13 and 35 on their respective parking positions.

4 Aeronautical stations for deicing

The following frequencies (usage of aircraft's upper VHF antenna is recommended) are used for the deicing coordinator and the deicing areas:

Installation	Call Sign	Frequency (MHz)
Deicing Coordinator	„München Deicing Coordinator"	121.990
RWY 26R / DA 15	„Deicing North 15"	121.590
RWY 26R / DA 14	„Deicing North 14"	121.740
RWY 26R / DA 13	„Deicing North 13"	121.840
RWY 08L / DA 1 (additional deicing area for 26R)	„Deicing North 1"	121.640
RWY 26L / DA 15	„Deicing South 15"	121.660
RWY 26L / DA 14	„Deicing South 14"	121.790
RWY 26L / DA 13	„Deicing South 13"	121.890
RWY 08R / DA 2 (additional deicing area for 26L)	„Deicing South 2"	121.680
RWY 08L / DA 1	„Deicing North 1"	121.590
RWY 08L / DA 2	„Deicing North 2"	121.740
RWY 08L / DA 3	„Deicing North 3"	121.840
RWY 26R / DA 15 (additional deicing area for 08L)	„Deicing North 15"	121.640
RWY 08R / DA 1	„Deicing South 1"	121.790
RWY 08R / DA 2	„Deicing South 2"	121.660
RWY 08R / DA 3	„Deicing South 3"	121.890
RWY 26L / DA 15 (additional deicing area for 08R)	„Deicing South 15"	121.680
Apron	„Deicing Ramp"	121.880

5 Deicing notification

If a deicing treatment is required the deicing coordinator shall be notified by the respective handling agent, airline operator or pilot in command as early as possible, but not later than 20 minutes prior estimated off-block time (TOBT). Engine fan-blade and propeller deicing treatment shall be requested at least 25 minutes prior estimated off-block time (EOBT).

The notification shall include flight-number, aircraft-type and parts of aircraft (e.g. wing, underwing, gear etc.) to be deiced. Clear-ice conditions on wing and special checks (e.g. hands on or tactile check) shall be reported to the deicing coordinator with deicing notification also. This notification is automatically transferred to ATC to build up the pre-departure sequence.

For the deicing notification the following communication channels shall be used:

Telephone (airport phone: 98666; external phone: +49 89 975 98666) or aeronautical station with call sign "München Deicing Coordinator" on frequency 121.990 MHz. This notification is mandatory and cannot be transmitted via "ATC".

If the deicing coordinator is not notified of the required deicing treatment in advance, a delay of this individual departing aircraft may be expected because ATC will put this flight at the end of the deicing sequence or deicing areas may not be in operation and equipment not readily available.

For propeller driven aircraft without operative propeller braking the expected arrival time of the deicing truck for treatment shall additionally be communicated by pilot in command on notification.

6 Deicing of jet-aircraft

Radio contact shall be established with the deicing team when advised by ATC via the respective frequency of "München Deicing" (see "4 Aeronautical stations for deicing"). Taxiing onto deicing area is not permitted without instruction of the responsible deicing teamchief. Aircraft shall come to a stop with the cockpit abeam the groundmarking "DEICING HOLD" on both sides of the aircraft.

When taxiing onto the deicing area assigned, pilot shall make sure, that the auxiliary power unit (APU) is switched off*), flaps and slats are retracted and bleed air system is closed. The deicing operation will commence after the pilot has confirmed, that:

- Parking brake is set and aircraft is ready for treatment
- Satcom system is not active (if applicable)

If a take-off delay is expected, which exceeds the hold-over time, pilot shall notify the deicing teamchief to stop deicing until further notice.

Deicing is performed with aircraft engines running.

During deicing the pilot shall maintain constant listening watch on the respective deicing frequency. After completed deicing and transmission of the anti-icing code by the deicing teamchief, pilot shall report ready for taxi to ATC. When informing ATC about completion of deicing treatment, ATC will try to ensure take-off within the respective hold-over time.

Note:

*) Pilots may be requested by their responsible ground engineer to switch off engines temporarily for a further physical tactile check. A switch off of the auxiliary power unit (APU) is not required for said way of after-anti-icing check. Permission to restart engines does not need to be obtained from ATC again.

For communication with the deicing team chief on remote deicing areas the following phraseology shall be used:

Cockpit:	Teamchief
<p>Deicing North 15, this is Lufthansa 410, request deicing</p> <p>Lufthansa 410: Taxi onto DA15</p>	<p>Good morning (good evening) Lufthansa 410, this is Deicing North 15. Continue taxi onto DA15 and stop abeam "deicing hold" marking</p>

If Sure WX / LWE used by customer

<p>Lufthansa 410: One-Step / Two-Step</p> <p>Lufthansa 410: Parking brake set and ready for treatment</p> <p>Lufthansa 410: Satcom not active</p>	<p>Lufthansa 410, which procedure do you request?</p> <p>Lufthansa 410, confirm One-Step / Two-Step</p> <p>Lufthansa 410, confirm parking brake is set and aircraft is ready for deicing.</p> <p>Lufthansa 410, confirm Satcom is not active (If applicable)</p> <p>Lufthansa 410, deicing commences. You are now blocked by deicing vehicles. Monitor this frequency. I will call you back.</p>
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If Sure WX / LWE not used by customer

<p>Lufthansa 410: Parking brake set and ready for treatment</p> <p>Lufthansa 410: Satcom not active</p>	<p>Lufthansa 410, we will use type I for de- and anti-icing.</p> <p><u>If type IV fluid is used:</u></p> <p>Lufthansa 410, we will use type I for deicing and type IV Clariant Safewing MP IV LAUNCH 100% for anti-icing.</p> <p>Lufthansa 410, confirm parking brake is set and aircraft is ready for deicing.</p> <p>Lufthansa 410, confirm Satcom is not active (If applicable)</p> <p>Lufthansa 410, deicing commences. You are now blocked by deicing vehicles. Monitor this frequency. I will call you back.</p>
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After completion of deicing/anti-icing

<p>Lufthansa 410: Aircraft de- /anti-iced; anti-icing with type I, 15.10 LT</p> <p>Lufthansa 410: Aircraft de- /anti-iced; anti-icing with type IV 100%, 15.10 LT</p> <p>Lufthansa 410: Thank you, good bye</p>	<p>Lufthansa 410, post deicing/anti-icing check is completed. If tactile check by EFM: Tactile check completed. Aircraft de- /anti-iced; Aircraft anti-iced with type I, 15.10 LT</p> <p><u>If type IV fluid was used:</u></p> <p>Lufthansa 410, post deicing/anti-icing check is completed. Aircraft de- /anti-iced; Aircraft anti-iced with type IV Clariant Safewing MP IV LAUNCH 100%, 15.10 LT</p> <p>Engine run up on deicing area is not allowed (ex. A/C with rear mounted engines); Deicing area is now clear of deicing vehicles; Deicing terminated, hold position and contact ATC as soon as possible; good bye.</p>
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After "local area contamination removal" or treatment of the lower side of wing and/or horizontal stabilizer

	<p>Lufthansa 410, local area deicing only. Aircraft is clean. Holdover times do not apply</p>
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7 Deicing Message Boards

To facilitate deicing operations, all remote deicing pads are equipped with variable information signs ("Message Boards"):

Binding communication remains via VHF aircraft radio between the deicing team chief and the cockpit crew. The Message Boards only serve as supplementary support for cockpit crews in deicing operations.

The Message Boards conveys the following variable messages to the cockpit crew, depending on status of the deicing process (yellow text on black background):

Text on Message Board	Meaning
A/C DEICING IN PROGRESS	Deicing operations are in progress. Aircraft shall hold position.
A/C DEICING TERMINATED	Deicing operations are terminated.
HOLD POSITION	The aircraft shall hold position.
CONTACT ATC	The cockpit crew shall contact ATC as advised.
Blank	Blank display. No text is displayed.

"A/C DEICING IN PROGRESS" is displayed as steady message.

"A/C DEICING TERMINATED", "HOLD POSITION", "CONTACT ATC" are displayed as alternating messages (every 3 seconds) and are to be understood as coherent information.

After a running time of 30 seconds, the alternating messages switch off and the display switches to the dark standby mode without text.

8 Deicing of propeller driven aircraft

Deicing of propeller driven aircraft is performed with engines switched off. Such aircraft are deiced on their respective parking positions on the aprons. Prior to deicing, the pilot shall verify the respective TSAT on ATC-frequency of "München Delivery". The TSAT value shall be confirmed with the team chief and the aircraft deicing shall be completed with reaching the TSAT value. After completing deicing, the pilot shall immediately request start-up clearance. The remaining hold-over time shall also be reported to ATC.

Note: For propeller driven aircrafts with operative propeller breaking following regulation applies:

These aircraft shall be deiced with running engines and propeller braking according to the procedure for jet aircraft on deicing areas at runway heads (see "6 Deicing of jet-aircraft"). For ATR 42/72 propeller brake must be operative.

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For communication with the deicing team chief on the aprons the following phraseology shall be used:

Cockpit:	Teamchief
	Good morning (good evening) <i>Lufthansa 410</i> , this is deicing truck <i>E20</i>

If Sure WX / LWE used by customer

<i>Lufthansa 410: One-Step / Two-Step</i>	<i>Lufthansa 410</i> , which procedure do you request?
	<i>Lufthansa 410</i> , confirm <i>One-Step / Two-Step</i>
<i>Lufthansa 410: Ready for treatment</i>	<i>Lufthansa 410</i> , confirm aircraft is ready for deicing.
<i>Lufthansa 410: Satcom not active</i>	<i>Lufthansa 410</i> , confirm Satcom is not active (If applicable).
	<i>Lufthansa 410</i> , deicing commences. You are blocked by deicing vehicle. Monitor this frequency. I will call you back.

If Sure WX / LWE not used by customer

	<i>Lufthansa 410</i> , we will use type I for de- and anti-icing.
	<u>If type IV fluid is used:</u>
	<i>Lufthansa 410</i> , we will use type I for deicing and type IV Clariant Safewing MP IV LAUNCH 100% for anti-icing.
<i>Lufthansa 410: Parking brake set and ready for treatment</i>	<i>Lufthansa 410</i> , confirm aircraft is ready for deicing.
<i>Lufthansa 410: Satcom not active</i>	<i>Lufthansa 410</i> , confirm Satcom is not active (If applicable)
	<i>Lufthansa 410</i> , deicing commences. You are blocked by deicing vehicle. Monitor this frequency. I will call you back.

After completion of deicing/anti-icing

<i>Lufthansa 410: Aircraft de- /anti-iced; anti-icing with type I, 15.10 LT</i>	<i>Lufthansa 410</i> , post deicing/anti-icing check is completed. Aircraft de- /anti-iced; Aircraft anti-iced with type I, 15.10 LT
	<u>If type IV fluid was used:</u>
<i>Lufthansa 410: Aircraft de- /anti-iced; anti-icing with type IV 100%, 15.10 LT</i>	<i>Lufthansa 410</i> , post deicing/anti-icing check is completed. Aircraft de-/anti-iced; Aircraft anti-iced with type IV Clariant Safewing MP IV LAUNCH 100%, 15.10 LT
<i>Lufthansa 410: Thank you and good bye</i>	Parking position is now clear of deicing vehicle. Deicing terminated, contact ATC as soon as possible; good bye.

After "local area contamination removal" or treatment of the lower side of wing and/or horizontal stabilizer

	<i>Lufthansa 410</i> , local area deicing only. Aircraft is clean. Holdover times do not apply
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9 Deicing of general aviation aircraft

Deicing of General Aviation fixed wing propeller driven aircraft and helicopters on ramps is performed with engines switched off. Prior to deicing, the pilot shall verify on ATC-frequency of "Clearance Delivery" the respective TSAT. The TSAT value shall be confirmed with the team chief and the aircraft deicing shall be completed with reaching the TSAT value. After completing deicing, pilot shall immediately request start-up clearance. The remaining hold-over time shall also be reported to ATC

Note: For General Aviation jet-aircraft following regulation applies:
These aircraft shall be deiced with running engines according to the procedure for jet aircraft on deicing areas at runway heads (see "6 Deicing of jet-aircraft").

10 Special deicing requirements and icing conditions

- Taxi, underwing, belly and gear deicing can only be performed on apron parking stand upon request with engines off.
- Engine Nbr. 2 check for three-engine aircraft before engine-start can only be performed on apron parking stand upon request. EFM will only provide cherry picker, the actual check must be performed by carrier's staff or agent.
- Deicing of engine fan blades and propellers can only be performed on apron parking stand. EFM performs deicing of fan blades with hot air only; contaminations of propellers are removed by the use of heated deicing fluid or hot air.
- Clear-ice conditions on wings shall be reported to the deicing coordinator with deicing notification.
- After anti-icing checks by the carrier itself shall be performed on deicing area (see "12 Access to deicing areas").

11 Fluids

Deicing and anti-icing is performed with heated and pre-mixed (55/45%) ISO/SAE type I fluid (Clariant Safewing MP I LFD). To prolong the hold-over time as a second step unheated and undiluted (100%) SAE type IV fluid (Clariant Safewing MP IV LAUNCH) is used.

EFM does not use alkali organic salt-based fluids for deicing/anti-icing of aircraft.

12 Environment

Deicing/anti-icing fluid is a chemical product with environmental impact. Any unnecessary spillage must be avoided. An engine run up on the deicing area after the completion of the deicing/anti-icing treatment is strictly prohibited (ex. a/c with rear mounted engines).

13 Access to deicing areas

All remote deicing areas are belonging to the area of responsibility of Air Traffic Control (ATC).

In order to perform the after anti-icing-check or flight control check required by the airline, a limited authorized group of airline technical staff is allowed to operate within area of competency of ATC.

All personnel having to operate on and in vicinity of deicing areas during aircraft deicing operation must hold a written permission issued by Vice President Operations or Head of Airport Operations of FMG.

Vice President Operations: +49 89 975 21100 / alexander.hoffmann@munich-airport.de

Head of Airport Operations: +49 89 975 43590 / stefan.haeberlein@munich-airport.de

Essential precondition for this permission is that all involved personnel have undergone specific training at FMG Staff Training Centre (phone: +49 89 975 433 03). Communication between pilot and airline ground engineer shall be established with official airline VHF frequency or aircraft ground communication.

Vehicles operating on and in the vicinity of deicing areas during aircraft deicing operation must be equipped with a transponder and carry a yellow beacon on top of the vehicle.

14 Activation Deicing Area Opposite

An additional deicing area is available per runway and take-off direction.

These areas are located at the opposite end of the runway in use. Due to their location, it requires an increase of taxi times.

The areas may be used from aircraft up to ICAO Code "C" aircraft.

The notification procedure for deicing of jet aircraft remains unaffected. All aircraft have to be deiced on the remote deicing areas.

Air Traffic Control (ATC) assigns the areas according to the existing procedure (see 6 "Deicing of jet aircraft").

FMG

Flughafen München GmbH

Munich Airport



Alexander Hoffmann
Vice President Airport Operations
Manager Operations

EFM

Gesellschaft für Enteisen und Flugzeug-
schleppen am Flughafen München mbH

Aircraft Deicing and Towing Services



Jürgen Ohrner
Head of Operational Services