

FAA HOLDOVER TIME GUIDELINES



WINTER 2016-2017
ORIGINAL ISSUE: AUG. 5, 2016

The information contained in this document serves as the official FAA guidance, Holdover Times and Allowance Times for use during the 2016-2017 winter season. This document is designed to be used in conjunction with the FAA N 8900 series notice “Revised FAA-Approved Deicing Program Updates, Winter 2016-2017.”

Questions concerning FAA aircraft ground de/anti-icing requirements or Flight Standards policies should be addressed to charles.j.enders@faa.gov or 202-267-4557.

Questions on the technical content of the holdover time tables should be addressed to warren.underwood@faa.gov or 404-305-6652.

Questions regarding editorial content or web access issues should be addressed to sung.shin@faa.gov or 202-267-8086.

CHANGE CONTROL RECORDS

This page indicates any changes made to individual pages within the document. Changed pages have the appropriate revision date in the footer. Sidebars are shown to assist in identifying where changes have been made on these pages.

It is the responsibility of the end user to periodically check the following website for updates:
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/deicing/.

<i>REVISION</i>	<i>DATE</i>	<i>DESCRIPTION OF CHANGES</i>	<i>AFFECTED PAGES</i>	<i>AUTHOR</i>

SUMMARY OF CHANGES FOR WINTER 2016-2017

The principal changes from the previous year are briefly indicated herein.

ACTIVE FROST

- A note has been added to the active frost holdover time (HOT) table to provide guidance on the appropriate outside air temperature to select in changing conditions.

TYPE I FLUIDS

- The Type I HOT guidelines are unchanged.

TYPE II FLUIDS

- Fluid-specific HOT guidelines have been created for the new Type II fluid Beijing Yadilite Aviation YD-102 Type II.
- LNT Solutions P250 has been removed from the Type II guidelines.
- Significant changes (both increases and decreases) have been made to the Type II generic holdover times as a result of the new and removed Type II fluids.
- The holdover times for snow in the “below -14°C to LOU” row have been reduced for all Type II and Type IV fluids. This is the result of a two-year research program showing the new holdover times are more appropriate.

TYPE III FLUIDS

- Supplemental testing with AllClear AeroClear MAX resulted in changes to most of its holdover times for winter 2016-2017.

TYPE IV FLUIDS

- Fluid-specific HOT guidelines have been created for three new Type IV fluids: Clariant Max Flight AVIA, Clariant Safewing EG IV NORTH and Shaanxi Cleanway Aviation Cleansurface IV.
- Cryotech Polar Guard and Dow Chemical UCAR™ FlightGuard AD-480 have been removed from the Type IV guidelines as per the protocol for removing obsolete fluids.
- Supplemental testing with Deicing Solutions ECO-SHIELD® resulted in changes to most of its holdover times for winter 2016-2017. Its lowest operational use temperature (LOU) and lowest on-wing viscosity (LOWV) have also changed.
- Significant changes (both increases and decreases) have been made to the Type IV generic holdover times as a result of the new and removed Type IV fluids. In addition, the Type IV generic HOT table has been expanded to include holdover times for three snowfall intensities: very light, light and moderate. This was possible as, for the first time, all fluid-specific Type IV holdover time tables include light, very light and moderate snow holdover times.
- The holdover times for snow in the “below -14°C to LOU” row have been reduced for all Type II and Type IV fluids. This is the result of a two-year research program showing the new holdover times are more appropriate.

ICE PELLET AND SMALL HAIL ALLOWANCE TIMES

- The rows in both the Type III and Type IV allowance time tables, each containing a specific precipitation condition, have been reordered for ease of use.
- A note has been added to both the Type III and Type IV allowance time tables indicating they are for use with aircraft with rotation speeds of 100 knots or greater only.

- A review of existing data resulted in a change to the Type III allowance time for “Light Ice Pellets Mixed with Moderate Snow” in the “Below -5 to -10°C” cell (from 10 to 5 minutes).
- Allowance times have been added for Type IV fluid in “Light Ice Pellets Mixed with Light Snow” and “Light Ice Pellets Mixed with Moderate Snow” in the “Below -10 to -16°C” temperature band.
- New rows / allowance times have been added to the Type IV table for two new precipitation conditions: “Moderate Ice Pellets (or Small Hail) Mixed with Moderate Freezing Drizzle” and “Moderate Ice Pellets (or Small Hail) Mixed with Moderate Rain”.
- The coldest temperature band in the Type IV table has been divided into two temperature bands: “Below -10 to -16°C” and “Below -16 to -22°C.”

FLUID APPLICATION TABLES

- Guidance for the application of Type III fluid was previously provided in the same table as the guidance for the application of Type II/IV fluid. For the winter of 2016-2017, this guidance is provided in two separate Type III fluid application tables. Table 11-H provides guidance for the application of heated Type III fluid and Table 11-U provides guidance for the application of unheated Type III fluid.
- Changes have been made to the Type I and Type II/IV fluid application tables to improve harmonization with the Transport Canada and SAE fluid application tables.

EARLY FLUID FAILURE ON EXTENDED SLATS AND FLAPS

- Research has determined that fluid degradation is accelerated by the steeper angles of the flaps/slats in the takeoff configuration. The degree of potential degradation is significantly affected by the specific aircraft design. For the winter of 2014-2015, holdover time and allowance time tables were published which include 90% adjusted holdover / allowance times. These adjusted tables will continue to be used for winter 2016-2017.
- The 90% adjusted tables provide holdover / allowance times that must be used when flaps and slats are deployed prior to de/anti-icing. Standard holdover / allowance times can be used if flaps and slats are deployed as close to departure as safety allows. Additional guidance is provided in the FAA N 8900 series notice “Revised FAA-Approved Deicing Program Updates, Winter 2016-2017.”

IMPORTANT NOTE ON HOTS FOR NON-STANDARD DILUTIONS OF TYPE II, III, AND IV FLUIDS

- When a Type II, III, or IV fluid is diluted to other than the published 100/0, 75/25 or 50/50 dilutions, the more conservative holdover time and LOUT associated with either the dilution above or below the selected dilution are applicable. For example:
 - (a) The holdover time and LOUT of an 80/20 dilution would be the more conservative holdover time and LOUT of either the 100/0 or 75/25 dilutions;
 - (b) The holdover time and LOUT of a 60/40 dilution would be the more conservative holdover time and LOUT of either the 75/25 or 50/50 dilutions.

RELOCATION OF KEY GUIDANCE CONTENT

- The guidance material previously contained in this document under the heading “Key Guidance” has been relocated to the related FAA N 8900 series notice “Revised FAA-Approved Deicing Program Updates, Winter 2016-2017.” This has been done so that all pertinent guidance material is provided in a single document.

HOLDOVER TIME (HOT) GUIDELINES FOR WINTER 2016-2017

Standard HOT Guidelines and Allowance Times

HOT Guidelines - SAE Type I, II, III, and IV Fluids in Active Frost Table 0

Type I HOT Guidelines - SAE Type I Fluid on Critical Aircraft Surfaces Composed Predominantly of Aluminum Table 1A

Type I HOT Guidelines - SAE Type I Fluid on Critical Aircraft Surfaces Composed Predominantly of Composites Table 1C

Type II HOT Guidelines - SAE Type II Fluids Table 2-Generic

Type II HOT Guidelines - ABAX ECOWING 26..... Table 2A

Type II HOT Guidelines - AVIATION SHAANXI HI-TECH CLEANWING II Table 2B

Type II HOT Guidelines - BEIJING YADILITE AVIATION YD-102 TYPE II Table 2C

Type II HOT Guidelines - CLARIANT SAFEWING MP II FLIGHT Table 2D

Type II HOT Guidelines - CLARIANT SAFEWING MP II FLIGHT PLUS..... Table 2E

Type II HOT Guidelines - CRYOTECH POLAR GUARD® II Table 2F

Type II HOT Guidelines - KILFROST ABC-ICE CLEAR II Table 2G

Type II HOT Guidelines - KILFROST ABC-K PLUS Table 2H

Type II HOT Guidelines - NEWAVE AEROCHEMICAL FCY-2..... Table 2I

Type II HOT Guidelines - NEWAVE AEROCHEMICAL FCY-2 BIO+ Table 2J

Type III HOT Guidelines - ALLCLEAR AEROCLEAR MAX, Low Speed Table 3A-LS

Type III HOT Guidelines - ALLCLEAR AEROCLEAR MAX, High Speed Table 3A-HS

Type III HOT Guidelines - CLARIANT SAFEWING MP III 2031 ECO, Low Speed Table 3B-LS

Type III HOT Guidelines - CLARIANT SAFEWING MP III 2031 ECO, High Speed Table 3B-HS

Type IV HOT Guidelines - SAE Type IV Fluids Table 4-Generic

Type IV HOT Guidelines - ABAX ECOWING AD-49..... Table 4A

Type IV HOT Guidelines - CLARIANT MAX FLIGHT 04..... Table 4B

Type IV HOT Guidelines - CLARIANT MAX FLIGHT AVIA..... Table 4C

Type IV HOT Guidelines - CLARIANT MAX FLIGHT SNEG..... Table 4D

Type IV HOT Guidelines - CLARIANT SAFEWING EG IV NORTH..... Table 4E

Type IV HOT Guidelines - CLARIANT SAFEWING MP IV LAUNCH Table 4F

Type IV HOT Guidelines - CLARIANT SAFEWING MP IV LAUNCH PLUS..... Table 4G

Type IV HOT Guidelines - CRYOTECH POLAR GUARD® ADVANCE Table 4H

Type IV HOT Guidelines - DEICING SOLUTIONS ECO-SHIELD® Table 4I

Type IV HOT Guidelines - DOW CHEMICAL UCAR™ ENDURANCE EG106..... Table 4J

Type IV HOT Guidelines - DOW CHEMICAL UCAR™ FLIGHTGUARD AD-49..... Table 4K

Type IV HOT Guidelines - KILFROST ABC-S PLUS Table 4L

Type IV HOT Guidelines - LNT SOLUTIONS E450 Table 4M

Type IV HOT Guidelines - NEWAVE AEROCHEMICAL FCY 9311 Table 4N

Type IV HOT Guidelines - SHAANXI CLEANWAY AVIATION CLEANSURFACE IV Table 4O

Ice Pellet and Small Hail Allowance Times - SAE Type III Fluids Table 5

Ice Pellet and Small Hail Allowance Times - SAE Type IV Fluids..... Table 6

Supplemental Guidance

Snowfall Intensities as a Function of Prevailing Visibility Table 7

Fluids Tested for Anti-icing Performance and Aerodynamic Acceptance Table 8

Guidelines for the Application of SAE Type I Fluid..... Table 9

Guidelines for the Application of SAE Type II and Type IV Fluid Table 10

Guidelines for the Application of Heated SAE Type III Fluid Table 11-H
 Guidelines for the Application of Unheated SAE Type III Fluid Table 11-U

90% Adjusted HOT Guidelines and Allowance Times

90% Adjusted HOT Guidelines - SAE Type I, II, III, and IV Fluids in Active Frost..... Table 0-90%
 90% Adjusted Type I HOT Guidelines - SAE Type I Fluid on Critical Aircraft Surfaces
 Composed Predominantly of Aluminum Table 1A-90%
 90% Adjusted Type I HOT Guidelines - SAE Type I Fluid on Critical Aircraft Surfaces
 Composed Predominantly of Composites Table 1C-90%
 90% Adjusted Type II HOT Guidelines - SAE Type II Fluid Table 2-Generic-90%
 90% Adjusted Type II HOT Guidelines - ABAX ECOWING 26 Table 2A-90%
 90% Adjusted Type II HOT Guidelines - AVIATION SHAANXI HI-TECH CLEANWING II Table 2B-90%
 90% Adjusted Type II HOT Guidelines - BEIJING YADILITE AVIATION YD-102 TYPE II Table 2C-90%
 90% Adjusted Type II HOT Guidelines - CLARIANT SAFEWING MP II FLIGHT Table 2D-90%
 90% Adjusted Type II HOT Guidelines - CLARIANT SAFEWING MP II FLIGHT PLUS Table 2E-90%
 90% Adjusted Type II HOT Guidelines - CRYOTECH POLAR GUARD® II Table 2F-90%
 90% Adjusted Type II HOT Guidelines - KILFROST ABC-ICE CLEAR II Table 2G-90%
 90% Adjusted Type II HOT Guidelines - KILFROST ABC-K PLUS Table 2H-90%
 90% Adjusted Type II HOT Guidelines - NEWAVE AEROCHEMICAL FCY-2 Table 2I-90%
 90% Adjusted Type II HOT Guidelines - NEWAVE AEROCHEMICAL FCY-2 BIO+ Table 2J-90%
 90% Adjusted Type III HOT Guidelines - ALLCLEAR AEROCLEAR MAX, Low Speed Table 3A-LS-90%
 90% Adjusted Type III HOT Guidelines - ALLCLEAR AEROCLEAR MAX, High Speed.... Table 3A-HS-90%
 90% Adjusted Type III HOT Guidelines - CLARIANT SAFEWING MP III 2031 ECO,
 Low Speed Table 3B-LS-90%
 90% Adjusted Type III HOT Guidelines - CLARIANT SAFEWING MP III 2031 ECO,
 High Speed Table 3B-HS-90%
 90% Adjusted Type IV HOT Guidelines - SAE Type IV Fluids..... Table 4-Generic-90%
 90% Adjusted Type IV HOT Guidelines - ABAX ECOWING AD-49 Table 4A-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT MAX FLIGHT 04 Table 4B-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT MAX FLIGHT AVIA Table 4C-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT MAX FLIGHT SNEG Table 4D-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT SAFEWING EG IV NORTH Table 4E-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT SAFEWING MP IV LAUNCH Table 4F-90%
 90% Adjusted Type IV HOT Guidelines - CLARIANT SAFEWING MP IV LAUNCH PLUS Table 4G-90%
 90% Adjusted Type IV HOT Guidelines - CRYOTECH POLAR GUARD® ADVANCE Table 4H-90%
 90% Adjusted Type IV HOT Guidelines - DEICING SOLUTIONS ECO-SHIELD® Table 4I-90%
 90% Adjusted Type IV HOT Guidelines - DOW CHEMICAL UCAR™ ENDURANCE EG106 .. Table 4J-90%
 90% Adjusted Type IV HOT Guidelines - DOW CHEMICAL UCAR™ FLIGHTGUARD
 AD-49 Table 4K-90%
 90% Adjusted Type IV HOT Guidelines - KILFROST ABC-S PLUS Table 4L-90%
 90% Adjusted Type IV HOT Guidelines - LNT SOLUTIONS E450 Table 4M-90%
 90% Adjusted Type IV HOT Guidelines - NEWAVE AEROCHEMICAL FCY 9311 Table 4N-90%
 90% Adjusted Type IV HOT Guidelines - SHAANXI CLEANWAY AVIATION
 CLEANSURFACE IV Table 4O-90%
 90% Adjusted Ice Pellet and Small Hail Allowance Times - SAE Type III Fluids..... Table 5-90%
 90% Adjusted Ice Pellet and Small Hail Allowance Times - SAE Type IV Fluids Table 6-90%

**TABLE 0. HOLDOVER TIME GUIDELINES FOR
SAE TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS IN ACTIVE FROST**

Outside Air Temperature ^{1,2,3}		Approximate Holdover Times (hours:minutes)	Outside Air Temperature ^{2,3}		Concentration Neat Fluid/Water (Volume %/ Volume %)	Approximate Holdover Times (hours:minutes)		
Degrees Celsius	Degrees Fahrenheit		Active Frost Type I	Degrees Celsius		Degrees Fahrenheit	Active Frost	
							Type II	Type III ⁴
-1 and above	30 and above	0:45 (0:35) ⁵	-1 and above	30 and above	100/0	8:00	2:00	12:00
			75/25	5:00	1:00	5:00		
			50/50	3:00	0:30	3:00		
below -1 to -3	below 30 to 27		100/0	8:00	2:00	12:00		
			75/25	5:00	1:00	5:00		
			50/50	1:30	0:30	3:00		
below -3 to -10	below 27 to 14		100/0	8:00	2:00	10:00		
		75/25	5:00	1:00	5:00			
below -10 to -14	below 14 to 7		100/0	6:00	2:00	6:00		
			75/25	1:00	1:00	1:00		
below -14 to -21	below 7 to -6		100/0	6:00	2:00	6:00		
below -21 to LOUT	below -6 to LOUT		100/0	2:00	2:00	4:00		
			Below -25	Below -13	No holdover time guidelines exist			

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

- 1 Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 Changes in outside air temperature (OAT) over the course of longer frost events can be significant; the appropriate holdover time to use is the one provided for the coldest OAT that has occurred in the time between the de/anti-icing fluid application and takeoff.
- 4 To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated. Clariant Safewing MP III 2031 ECO must be applied heated.
- 5 Value in parentheses is for aircraft with critical surfaces that are predominantly or entirely constructed of composite materials.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 1A. HOLDOVER TIME GUIDELINES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM

Outside Air Temperature ^{1,2}		Wing Surface	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	Aluminum	0:11-0:17	0:18-0:22	0:11-0:18	0:06-0:11	0:09-0:13	0:02-0:05	0:02-0:05	CAUTION: No holdover time guidelines exist
below -3 to -6	below 27 to 21	Aluminum	0:08-0:13	0:14-0:17	0:08-0:14	0:05-0:08	0:05-0:09	0:02-0:05		
below -6 to -10	below 21 to 14	Aluminum	0:06-0:10	0:11-0:13	0:06-0:11	0:04-0:06	0:04-0:07	0:02-0:05		
Below -10	below 14	Aluminum	0:05-0:09	0:07-0:08	0:04-0:07	0:02-0:04				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 1C. HOLDOVER TIME GUIDELINES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF COMPOSITES

Outside Air Temperature ^{1,2}		Wing Surface	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	Composite	0:09-0:16	0:12-0:15	0:06-0:12	0:03-0:06	0:08-0:13	0:02-0:05	0:01-0:05	CAUTION: No holdover time guidelines exist
below -3 to -6	below 27 to 21	Composite	0:06-0:08	0:11-0:13	0:05-0:11	0:02-0:05	0:05-0:09	0:02-0:05		
below -6 to -10	below 21 to 14	Composite	0:04-0:08	0:09-0:12	0:05-0:09	0:02-0:05	0:04-0:07	0:02-0:05		
Below -10	below 14	Composite	0:04-0:07	0:07-0:08	0:04-0:07	0:02-0:04				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2-GENERIC. TYPE II HOLDOVER TIME GUIDELINES FOR SAE TYPE II FLUIDS

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	0:35-1:30	0:20-0:45	0:30-1:00	0:15-0:30	0:07-0:40	CAUTION: No holdover time guidelines exist
		75/25	0:25-0:55	0:15-0:25	0:15-0:40	0:10-0:20	0:04-0:25	
		50/50	0:15-0:25	0:05-0:10	0:08-0:15	0:05-0:09		
below -3 to -14	below 27 to 7	100/0	0:20-1:05	0:15-0:30	0:20-0:45 ⁷	0:10-0:20 ⁷		
		75/25	0:25-0:50	0:08-0:20	0:15-0:25 ⁷	0:08-0:15 ⁷		
Below -14 to LOU ^T	Below 7 to LOU ^T	100/0	0:20-0:35 ⁸	0:08-0:10 ⁸				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).
- 8 If the LOU^T is unknown, no holdover time guidelines exist below -22.5 °C (-8.5 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2A. TYPE II HOLDOVER TIME GUIDELINES FOR ABAX ECOWING 26

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:25-2:35	1:35-1:50	1:00-1:35	0:40-1:00	0:50-1:35	0:40-0:50	0:20-1:25	CAUTION: No holdover time guidelines exist
		75/25	1:05-1:55	1:15-1:25	0:45-1:15	0:25-0:45	0:45-1:05	0:25-0:35	0:10-1:00	
		50/50	0:30-0:45	0:40-0:50	0:20-0:40	0:10-0:20	0:15-0:25	0:08-0:10		
below -3 to -14	below 27 to 7	100/0	0:45-2:15	1:25-1:40	0:55-1:25	0:35-0:55	0:30-1:10 ⁷	0:15-0:35 ⁷		
		75/25	0:35-1:15	0:55-1:05	0:40-0:55	0:25-0:40	0:20-0:50 ⁷	0:15-0:25 ⁷		
below -14 to -25	below 7 to -13	100/0	0:25-0:45	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2B. TYPE II HOLDOVER TIME GUIDELINES FOR AVIATION SHAANXI HI-TECH CLEANWING II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	0:55-1:50	0:30-0:55	0:35-1:05	0:25-0:35	0:10-0:55	CAUTION: No holdover time guidelines exist
		75/25	0:50-1:20	0:25-0:45	0:35-1:00	0:20-0:30	0:07-0:50	
		50/50	0:35-1:00	0:15-0:30	0:20-0:40	0:10-0:20		
below -3 to -14	below 27 to 7	100/0	0:45-1:50	0:30-0:55	0:30-0:55 ⁷	0:20-0:25 ⁷		
		75/25	0:40-1:45	0:25-0:45	0:35-0:40 ⁷	0:20-0:25 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:20-0:50	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2C. TYPE II HOLDOVER TIME GUIDELINES FOR BEIJING YADILITE AVIATION YD-102 TYPE II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:10-2:00	1:40-2:00	0:50-1:40	0:25-0:50	0:40-1:15	0:35-0:40	0:10-1:00	CAUTION: No holdover time guidelines exist
		75/25	0:25-0:55	0:50-1:05	0:25-0:50	0:15-0:25	0:15-0:40	0:10-0:20	0:04-0:25	
		50/50	0:15-0:25	0:25-0:30	0:10-0:25	0:05-0:10	0:08-0:15	0:07-0:09		
below -3 to -14	below 27 to 7	100/0	0:45-1:30	1:00-1:15	0:30-1:00	0:15-0:30	0:35-0:50 ⁷	0:25-0:25 ⁷		
		75/25	0:30-0:50	0:35-0:45	0:20-0:35	0:08-0:20	0:15-0:25 ⁷	0:09-0:15 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:20-0:45	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2D. TYPE II HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP II FLIGHT

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:30-4:00	2:35-3:00	1:35-2:35	1:00-1:35	1:20-2:00	0:45-1:25	0:10-1:30	CAUTION: No holdover time guidelines exist
		75/25	1:50-2:45	2:35-3:00	1:20-2:35	0:40-1:20	1:10-1:30	0:30-0:55	0:06-0:50	
		50/50	0:55-1:45	0:45-0:55	0:25-0:45	0:10-0:25	0:20-0:30	0:10-0:15		
below -3 to -14	below 27 to 7	100/0	0:55-1:45	1:50-2:10	1:05-1:50	0:40-1:05	0:35-1:30 ⁷	0:25-0:45 ⁷		
		75/25	0:25-1:05	1:20-1:40	0:40-1:20	0:20-0:40	0:25-1:10 ⁷	0:20-0:35 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:30-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2E. TYPE II HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP II FLIGHT PLUS

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	2:40-4:00	0:50-1:50	1:25-2:00	0:45-1:00	0:15-2:00	CAUTION: No holdover time guidelines exist
		75/25	2:35-4:00	1:00-1:45	1:35-2:00	0:50-1:15	0:15-1:15	
		50/50	1:05-2:20	0:15-0:25	0:30-1:05	0:15-0:20		
below -3 to -14	below 27 to 7	100/0	0:40-2:20	0:35-1:15	0:35-1:25 ⁷	0:35-0:55 ⁷		
		75/25	0:30-1:45	0:55-1:40	0:25-1:10 ⁷	0:30-0:45 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:20-0:40	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2F. TYPE II HOLDOVER TIME GUIDELINES FOR CRYOTECH POLAR GUARD® II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:50-4:00	2:35-2:50	1:50-2:35	1:20-1:50	1:35-2:00	1:15-1:30	0:15-2:00	CAUTION: No holdover time guidelines exist
		75/25	2:30-4:00	2:25-2:55	1:20-2:25	0:45-1:20	1:40-2:00	0:40-1:10	0:09-1:40	
		50/50	0:50-1:25	1:20-1:45	0:35-1:20	0:15-0:35	0:20-0:45	0:09-0:20		
below -3 to -14	below 27 to 7	100/0	0:55-2:30	1:45-1:55	1:15-1:45	0:55-1:15	0:35-1:35 ⁷	0:35-0:45 ⁷		
		75/25	0:40-1:30	1:45-2:05	1:00-1:45	0:35-1:00	0:25-1:05 ⁷	0:35-0:45 ⁷		
Below -14 to -30.5	Below 7 to -22.9	100/0	0:25-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2G. TYPE II HOLDOVER TIME GUIDELINES FOR KILFROST ABC-ICE CLEAR II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:00-1:45	1:45-2:10	0:50-1:45	0:25-0:50	0:40-1:05	0:25-0:35	0:07-0:45	CAUTION: No holdover time guidelines exist
		75/25	0:50-1:10	1:20-1:45	0:40-1:20	0:20-0:40	0:30-0:45	0:20-0:30	0:05-0:35	
		50/50	0:15-0:30	0:20-0:25	0:15-0:20	0:08-0:15	0:10-0:20	0:07-0:10		
below -3 to -14	below 27 to 7	100/0	0:40-1:35	1:15-1:35	0:35-1:15	0:20-0:35	0:25-1:00 ⁷	0:15-0:30 ⁷		
		75/25	0:40-1:20	0:55-1:10	0:25-0:55	0:15-0:25	0:25-0:45 ⁷	0:15-0:20 ⁷		
Below -14 to -29.5	Below 7 to -21.1	100/0	0:20-0:40	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2H. TYPE II HOLDOVER TIME GUIDELINES FOR KILFROST ABC-K PLUS

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
-3 and above	27 and above	100/0	2:15-3:45	1:00-1:40	1:50-2:00	1:00-1:25	0:20-2:00	CAUTION: No holdover time guidelines exist
		75/25	1:40-2:30	0:35-1:10	1:25-2:00	0:50-1:10	0:15-2:00	
		50/50	0:35-1:05	0:07-0:15	0:20-0:30	0:10-0:15		
below -3 to -14	below 27 to 7	100/0	0:30-1:05	0:50-1:25	0:25-1:00 ⁷	0:15-0:35 ⁷		
		75/25	0:25-1:25	0:35-1:05	0:20-0:55 ⁷	0:09-0:30 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:30-0:55	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2I. TYPE II HOLDOVER TIME GUIDELINES FOR NEWAVE AEROCHEMICAL FCY-2

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
-3 and above	27 and above	100/0	1:15-2:25	0:30-0:55	0:35-1:05	0:25-0:35	0:08-0:45	CAUTION: No holdover time guidelines exist
		75/25	0:50-1:30	0:20-0:40	0:25-0:45	0:15-0:25	0:05-0:25	
		50/50	0:25-0:35	0:15-0:25	0:10-0:20	0:07-0:10		
below -3 to -14	below 27 to 7	100/0	0:45-1:30	0:15-0:30	0:20-0:45 ⁷	0:15-0:20 ⁷		
		75/25	0:30-1:05	0:10-0:20	0:15-0:30 ⁷	0:08-0:15 ⁷		
below -14 to -28	below 7 to -18.4	100/0	0:25-0:35	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 2J. TYPE II HOLDOVER TIME GUIDELINES FOR NEWAVE AEROCHEMICAL FCY-2 BIO+

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:25-2:30	2:20-2:55	1:05-2:20	0:30-1:05	0:50-1:20	0:25-0:45	0:08-1:15	CAUTION: No holdover time guidelines exist
		75/25	0:45-1:20	1:20-1:40	0:40-1:20	0:20-0:40	0:25-0:50	0:15-0:25	0:06-0:35	
		50/50	0:15-0:30	0:25-0:30	0:15-0:25	0:08-0:15	0:10-0:20	0:08-0:10		
below -3 to -14	below 27 to 7	100/0	0:40-1:30	1:00-1:15	0:30-1:00	0:15-0:30	0:35-1:05 ⁷	0:15-0:30 ⁷		
		75/25	0:30-1:05	0:35-0:45	0:20-0:35	0:08-0:20	0:20-0:35 ⁷	0:15-0:20 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:20-1:00	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 3A-LS. LOW SPEED TYPE III HOLDOVER TIME GUIDELINES FOR ALLCLEAR AEROCLEAR MAX, APPLIED UNHEATED¹
FOR AIRCRAFT CONFORMING TO THE SAE AS5900 LOW SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:45-1:10	1:00-1:15	0:30-1:00	0:14-0:30	0:20-0:45	0:14-0:20	0:06-0:40	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10	below 27 to 14	100/0	0:45-1:25	1:00-1:15	0:30-1:00	0:14-0:30	0:20-0:40	0:15-0:25		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -16	below 14 to 3.2	100/0	0:30-1:05	1:00-1:15	0:30-1:00	0:14-0:30				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid when applied heated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 3A-HS. HIGH SPEED TYPE III HOLDOVER TIME GUIDELINES FOR ALLCLEAR AEROCLEAR MAX, APPLIED UNHEATED¹
FOR AIRCRAFT CONFORMING TO THE SAE AS5900 HIGH SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:45-1:10	1:00-1:15	0:30-1:00	0:14-0:30	0:20-0:45	0:14-0:20	0:06-0:40	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10	below 27 to 14	100/0	0:45-1:25	1:00-1:15	0:30-1:00	0:14-0:30	0:20-0:40	0:15-0:25		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -25	below 14 to -13	100/0	0:30-1:05	1:00-1:15	0:30-1:00	0:14-0:30				
below -25 to -35	below -13 to -31	100/0	0:15-0:40	0:40-0:50	0:19-0:40	0:09-0:19				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid when applied heated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 5 provides allowance times for ice pellets and small hail).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

**TABLE 3B-LS. LOW SPEED TYPE III HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING MP III 2031 ECO, APPLIED HEATED¹
FOR AIRCRAFT CONFORMING TO THE SAE AS5900 LOW SPEED AERODYNAMIC TEST CRITERION**

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:25-0:50	0:40-0:55	0:20-0:40	0:10-0:20	0:17-0:30	0:10-0:14	0:05-0:30	CAUTION: No holdover time guidelines exist
		75/25	0:19-0:40	0:35-0:45	0:16-0:35	0:07-0:16	0:13-0:20	0:08-0:09	0:03-0:18	
		50/50	0:13-0:18	0:25-0:30	0:13-0:25	0:07-0:13	0:13-0:14	0:07-0:07		
below -3 to -10	below 27 to 14	100/0	0:35-1:15	0:40-0:50	0:20-0:40	0:10-0:20	0:14-0:30	0:09-0:13		
		75/25	0:19-0:45 ⁸	0:25-0:35 ⁸	0:12-0:25 ⁸	0:05-0:12 ⁸	0:09-0:16 ⁸	0:06-0:08 ⁸		
below -10 to -16.5	below 14 to 2.3	100/0	0:25-0:45	0:40-0:45	0:19-0:40	0:09-0:19				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied heated to use these holdover times. No holdover times exist for this fluid applied unheated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 8 No holdover time guidelines exist for 75/25 fluid below -9 °C (15.8 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 3B-HS. HIGH SPEED TYPE III HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP III 2031 ECO, APPLIED HEATED¹
FOR AIRCRAFT CONFORMING TO THE SAE AS5900 HIGH SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:25-0:50	0:40-0:55	0:20-0:40	0:10-0:20	0:17-0:30	0:10-0:14	0:05-0:30	CAUTION: No holdover time guidelines exist
		75/25	0:19-0:40	0:35-0:45	0:16-0:35	0:07-0:16	0:13-0:20	0:08-0:09	0:03-0:18	
		50/50	0:13-0:18	0:25-0:30	0:13-0:25	0:07-0:13	0:13-0:14	0:07-0:07		
below -3 to -10	below 27 to 14	100/0	0:35-1:15	0:40-0:50	0:20-0:40	0:10-0:20	0:14-0:30	0:09-0:13		
		75/25	0:19-0:45	0:25-0:35	0:12-0:25	0:05-0:12	0:09-0:16	0:06-0:08		
below -10 to -25	below 14 to -13	100/0	0:25-0:45	0:40-0:45	0:19-0:40	0:09-0:19				
below -25 to -29	below -13 to -20.2	100/0	0:25-0:45	0:40-0:45	0:19-0:40	0:09-0:19				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied heated to use these holdover times. No holdover times exist for this fluid applied unheated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 5 provides allowance times for ice pellets and small hail).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4-GENERIC. TYPE IV HOLDOVER TIME GUIDELINES FOR SAE TYPE IV FLUIDS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:15-2:40	2:20-2:45	1:10-2:20	0:35-1:10	0:40-1:30	0:35-0:40	0:08-1:25	CAUTION: No holdover time guidelines exist
		75/25	1:25-2:40	2:05-2:15	1:15-2:05	0:45-1:15	0:50-1:20	0:30-0:45	0:09-1:15	
		50/50	0:25-0:50	0:40-0:45	0:25-0:40	0:15-0:25	0:15-0:30	0:09-0:15		
below -3 to -14	below 27 to 7	100/0	0:20-1:35	1:20-1:40	0:45-1:20	0:25-0:45	0:25-1:20 ⁷	0:20-0:25 ⁷		
		75/25	0:30-1:10	1:40-2:00	0:45-1:40	0:20-0:45	0:15-1:05 ⁷	0:15-0:25 ⁷		
below-14 to LOU	Below 7 to LOU	100/0	0:20-0:40 ⁸	0:20-0:25 ⁸	0:10-0:20 ⁸	0:08-0:10 ⁸				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).
- 8 If the LOU is unknown, no holdover time guidelines exist below -22.5 °C (-8.5 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4A. TYPE IV HOLDOVER TIME GUIDELINES FOR ABAX ECOWING AD-49

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:20-4:00	2:50-3:00	1:50-2:50	1:10-1:50	1:25-2:00	1:00-1:25	0:10-1:55	CAUTION: No holdover time guidelines exist
		75/25	2:25-4:00	2:05-2:15	1:40-2:05	1:20-1:40	1:55-2:00	0:50-1:30	0:10-1:40	
		50/50	0:25-0:50	0:40-0:45	0:25-0:40	0:15-0:25	0:15-0:30	0:10-0:15		
below -3 to -14	below 27 to 7	100/0	0:20-1:35	2:50-3:00	1:50-2:50	1:10-1:50	0:25-1:25 ⁷	0:20-0:25 ⁷		
		75/25	0:30-1:10	2:05-2:15	1:40-2:05	1:20-1:40	0:15-1:05 ⁷	0:15-0:25 ⁷		
below -14 to -26	below 7 to -14.8	100/0	0:25-0:40	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4B. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT MAX FLIGHT 04

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:40-4:00	3:00-3:00	2:45-3:00	1:25-2:45	2:00-2:00	1:10-1:30	0:20-2:00	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	0:50-2:30	2:20-2:50	1:10-2:20	0:35-1:10	0:25-1:30 ⁷	0:20-0:40 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -23.5	below 7 to -10.3	100/0	0:20-0:45	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4C. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT MAX FLIGHT AVIA

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:05-4:00	3:00-3:00	1:45-3:00	1:00-1:45	1:25-2:00	0:55-1:10	0:09-2:00	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:45-3:55	2:10-2:35	1:15-2:10	0:40-1:15	1:10-2:00 ⁷	0:55-1:30 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -28.5	below 7 to -19.3	100/0	0:35-1:25	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4D. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT MAX FLIGHT SNEG

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:25-4:00	2:45-3:00	1:40-2:45	1:05-1:40	2:00-2:00	0:50-1:40	0:20-1:30	CAUTION: No holdover time guidelines exist
		75/25	4:00-4:00	2:25-2:50	1:30-2:25	0:55-1:30	1:30-2:00	1:05-1:20	0:15-1:45	
		50/50	1:30-3:30	1:45-2:20	0:45-1:45	0:20-0:45	0:35-1:10	0:15-0:30		
below -3 to -14	below 27 to 7	100/0	0:45-2:20	2:00-2:20	1:15-2:00	0:45-1:15	0:30-1:25 ⁷	0:25-0:40 ⁷		
		75/25	0:30-1:25	1:40-2:00	1:00-1:40	0:40-1:00	0:20-1:05 ⁷	0:20-0:40 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:20-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4E. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING EG IV NORTH

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:20-3:55	3:00-3:00	1:40-3:00	0:50-1:40	1:30-2:00	0:50-0:55	0:08-2:00	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:45-4:00	2:45-3:00	1:30-2:45	0:50-1:30	1:05-1:50 ⁷	0:55-1:25 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -30	below 7 to -22	100/0	0:40-1:20	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4F. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	4:00-4:00	2:50-3:00	1:45-2:50	1:05-1:45	1:30-2:00	1:00-1:40	0:15-1:40	CAUTION: No holdover time guidelines exist
		75/25	3:40-4:00	3:00-3:00	1:45-3:00	1:00-1:45	1:40-2:00	0:45-1:15	0:10-1:45	
		50/50	1:25-2:45	1:25-1:40	0:45-1:25	0:25-0:45	0:30-0:50	0:20-0:25		
below -3 to -14	below 27 to 7	100/0	1:00-1:55	2:10-2:30	1:20-2:10	0:50-1:20	0:35-1:40 ⁷	0:25-0:45 ⁷		
		75/25	0:40-1:20	2:25-2:55	1:25-2:25	0:45-1:25	0:25-1:10 ⁷	0:25-0:45 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:30-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4G. TYPE IV HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP IV LAUNCH PLUS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:55-4:00	3:00-3:00	2:05-3:00	0:55-2:05	2:00-2:00	1:00-2:00	0:20-2:00	CAUTION: No holdover time guidelines exist
		75/25	3:55-4:00	3:00-3:00	1:55-3:00	0:50-1:55	2:00-2:00	1:20-1:25	0:20-1:50	
		50/50	1:15-1:50	1:35-2:00	0:45-1:35	0:20-0:45	0:25-1:00	0:15-0:20		
below -3 to -14	below 27 to 7	100/0	0:55-2:15	3:00-3:00	1:25-3:00	0:40-1:25	0:25-1:35 ⁷	0:25-0:40 ⁷		
		75/25	0:40-2:00	2:55-3:00	1:15-2:55	0:30-1:15	0:20-1:05 ⁷	0:20-0:30 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:25-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4H. TYPE IV HOLDOVER TIME GUIDELINES FOR CRYOTECH POLAR GUARD® ADVANCE

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:50-4:00	2:35-2:50	1:50-2:35	1:20-1:50	1:35-2:00	1:15-1:30	0:15-2:00	CAUTION: No holdover time guidelines exist
		75/25	2:30-4:00	2:25-2:55	1:20-2:25	0:45-1:20	1:40-2:00	0:40-1:10	0:09-1:40	
		50/50	0:50-1:25	1:20-1:45	0:35-1:20	0:15-0:35	0:20-0:45	0:09-0:20		
below -3 to -14	below 27 to 7	100/0	0:55-2:30	1:45-1:55	1:15-1:45	0:55-1:15	0:35-1:35 ⁷	0:35-0:45 ⁷		
		75/25	0:40-1:30	1:45-2:05	1:00-1:45	0:35-1:00	0:25-1:05 ⁷	0:35-0:45 ⁷		
Below -14 to -30.5	Below 7 to -22.9	100/0	0:25-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4I. TYPE IV HOLDOVER TIME GUIDELINES FOR DEICING SOLUTIONS ECO-SHIELD®

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:15-2:40	2:25-2:50	1:20-2:25	0:45-1:20	0:40-1:30	0:35-0:40	0:15-1:35	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:10-2:35	1:55-2:15	1:05-1:55	0:35-1:05	0:50-1:25 ⁷	0:30-0:40 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -25.5	below 7 to -13.9	100/0	0:30-1:00	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4J. TYPE IV HOLDOVER TIME GUIDELINES FOR DOW CHEMICAL UCAR™ ENDURANCE EG106

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:05-3:10	2:45-3:00	1:20-2:45	0:40-1:20	1:10-2:00	0:50-1:15	0:20-2:00	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:50-3:20	2:10-2:45	1:05-2:10	0:30-1:05	0:55-1:50 ⁷	0:45-1:10 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -27	below 7 to -16.6	100/0	0:30-1:05	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4K. TYPE IV HOLDOVER TIME GUIDELINES FOR DOW CHEMICAL UCAR™ FLIGHTGUARD AD-49

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:20-4:00	2:50-3:00	1:50-2:50	1:10-1:50	1:25-2:00	1:00-1:25	0:10-1:55	CAUTION: No holdover time guidelines exist
		75/25	2:25-4:00	2:05-2:15	1:40-2:05	1:20-1:40	1:55-2:00	0:50-1:30	0:10-1:40	
		50/50	0:25-0:50	0:40-0:45	0:25-0:40	0:15-0:25	0:15-0:30	0:10-0:15		
below -3 to -14	below 27 to 7	100/0	0:20-1:35	2:50-3:00	1:50-2:50	1:10-1:50	0:25-1:25 ⁷	0:20-0:25 ⁷		
		75/25	0:30-1:10	2:05-2:15	1:40-2:05	1:20-1:40	0:15-:1:05 ⁷	0:15-0:25 ⁷		
below -14 to -26	below 7 to -14.8	100/0	0:25-0:40	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4L. TYPE IV HOLDOVER TIME GUIDELINES FOR KILFROST ABC-S PLUS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:10-4:00	3:00-3:00	2:05-3:00	1:15-2:05	1:50-2:00	1:05-2:00	0:25-2:00	CAUTION: No holdover time guidelines exist
		75/25	1:25-2:40	2:05-2:25	1:15-2:05	0:45-1:15	1:00-1:20	0:30-0:50	0:10-1:20	
		50/50	0:30-0:55	1:00-1:10	0:30-1:00	0:15-0:30	0:15-0:40	0:15-0:20		
below -3 to -14	below 27 to 7	100/0	0:55-3:30	2:55-3:00	1:45-2:55	1:00-1:45	0:25-1:35 ⁷	0:20-0:30 ⁷		
		75/25	0:45-1:50	1:45-2:00	1:00-1:45	0:35-1:00	0:20-1:10 ⁷	0:15-0:25 ⁷		
below -14 to -28	below 7 to -18.4	100/0	0:40-1:00	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4M. TYPE IV HOLDOVER TIME GUIDELINES FOR LNT SOLUTIONS E450

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:50-2:55	2:25-2:45	1:35-2:25	1:00-1:35	1:35-2:00	0:55-1:20	0:25-2:00	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:30-3:55	1:50-2:05	1:10-1:50	0:45-1:10	1:45-2:00 ⁷	1:05-1:40 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -22.5	below 7 to -8.5	100/0	0:35-1:05	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 4N. TYPE IV HOLDOVER TIME GUIDELINES FOR NEWAVE AEROCHEMICAL FCY 9311

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:55-4:00	2:20-2:55	1:10-2:20	0:35-1:10	1:10-2:00	0:40-1:05	0:15-1:25	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	0:35-2:05	1:35-2:00	0:50-1:35	0:25-0:50	0:35-1:20 ⁷	0:20-0:35 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -29.5	below 7 to -21.1	100/0	0:30-0:55	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

TABLE 40. TYPE IV HOLDOVER TIME GUIDELINES FOR SHAANXI CLEANWAY AVIATION CLEANSURFACE IV

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:50-4:00	3:00-3:00	1:55-3:00	1:00-1:55	2:00-2:00	1:25-1:30	0:15-2:00	CAUTION: No holdover time guidelines exist
		75/25	2:35-4:00	3:00-3:00	1:35-3:00	0:45-1:35	0:50-2:00	0:35-0:45	0:09-1:15	
		50/50	1:05-2:25	1:40-2:20	0:40-1:40	0:15-0:40	0:25-0:50	0:15-0:20		
below -3 to -14	below 27 to 7	100/0	1:00-3:05	1:20-1:40	0:45-1:20	0:25-0:45	0:35-1:45 ⁷	0:20-0:35 ⁷		
		75/25	0:50-1:55	1:40-2:10	0:45-1:40	0:20-0:45	0:30-1:20 ⁷	0:25-0:40 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:30-0:50	0:20-0:25	0:10-0:20	0:08-0:10				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6 provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

ICE PELLET AND SMALL HAIL ALLOWANCE TIMES

1. Background

During the winter of 2006-2007, operations in ice pellets were approved by the FAA for “light ice pellets” with an allowance time of 25 minutes. That time was based on limited research conducted late in the winter of 2005-2006 at the request of various industry groups. Additional and more comprehensive ice pellet research was conducted jointly by the research teams of the FAA and Transport Canada the following winter.

This research consisted of extensive climatic chamber, wind tunnel, and live aircraft testing with ice pellets (light and moderate) and light ice pellets mixed with other forms of precipitation. Results of this research provide the basis for more comprehensive allowance times for operations in light ice pellets, as well as allowance times for operations in moderate ice pellets and light ice pellets mixed with other forms of precipitation.

Additional ice pellet research was conducted during the winter season of 2008-2009 which further expanded the ice pellet allowance times under specified conditions. Guidance was also provided for Type IV anti-icing fluid with embedded ice pellets “aged” beyond its allowance time when the precipitation stops at or prior to the expiration of the allowance time. This research demonstrated that provided the precipitation has stopped within the respective allowance time, the fluid remains effective up to 90 minutes after the start of the application time of the anti-icing fluid.

During the winter of 2009-2010, wind tunnel research conducted with a newer generation type airfoil showed that Type IV Propylene Glycol (PG) and Type IV Ethylene Glycol (EG) fluids behave differently under certain temperature and ice pellet conditions. Specifically, higher aircraft rotation speeds are required to effectively remove Type IV PG fluid contaminated with light or moderate ice pellets at temperatures less than -10 °C. Therefore, there are no allowance times associated with the use of Type IV PG fluids on aircraft with rotation speeds of less than 115 knots in conditions of light or moderate ice pellets at temperatures below -10 °C.

Furthermore, research with this newer generation type airfoil has shown that the allowance times are shorter when using Type IV PG fluids under certain conditions for all aircraft regardless of the rotation speed. This research resulted in the allowance time when using Type IV PG fluids at temperatures of -5 °C and above being limited to 15 minutes in moderate ice pellets.

Research has also indicated that Type IV PG fluids are removed less effectively when contaminated with moderate ice pellets at temperatures below -16 °C; operations in these conditions are not recommended. Therefore, there are no allowance times associated with the use of PG fluids in conditions of moderate ice pellets at temperatures below -16 °C, irrespective of aircraft rotation speed.

Type IV allowance times do not currently exist below -22 °C as existing cold temperature data is limited or not available below -22 °C and therefore allowance times cannot be provided.

Allowance times are also published for undiluted (100/0) Type III fluid applied unheated in select conditions. Further testing is required to expand Type III allowance times in other conditions, such as temperatures below -10 °C.

Allowance times for small hail are also published, as it was determined small hail is meteorologically equivalent to ice pellets.

The current allowance times, which were developed based on the aerodynamic testing described above, are provided in the Type III (Table 5) and Type IV (Table 6) allowance time tables.

2. Operational Guidance

- (a) Tests have shown that ice pellets generally remain in the frozen state imbedded in Type III and Type IV anti-icing fluid, and are not absorbed and dissolved by the fluid in the same manner as other forms of precipitation. Using current guidelines for determining anti-icing fluid failure, the presence of a contaminant not absorbed

by the fluid (remaining imbedded) would be an indication that the fluid has failed. These imbedded ice pellets are generally not readily detectable by the human eye during pre-takeoff contamination check procedures. Therefore, a visual pre-takeoff contamination check in ice pellet conditions may not be of value and is not required.

- (b) The research data have also shown that after proper deicing and anti-icing, the accumulation of light ice pellets, moderate ice pellets, and ice pellets mixed with other forms of precipitation in Type III and Type IV fluid will not prevent the fluid from flowing off the aerodynamic surfaces during takeoff. This flow-off, due to the shearing forces, occurs with rotation speeds consistent with Type III or Type IV anti-icing fluid recommended applications, and up to the applicable allowance time listed in the allowance time tables. These allowance times are from the start of the anti-icing fluid application. Additionally, if the ice pellet condition stops, and the allowance time has not been exceeded, the operator is permitted to consider the anti-icing fluid effective without any further action up to 90 minutes after the start of the application time of the anti-icing fluid. To use this guidance in the following conditions, the outside air temperature (OAT) must remain constant or increase during the 90-minute period:
- light ice pellets mixed with light or moderate freezing drizzle;
 - light ice pellets mixed with light freezing rain;
 - light ice pellets mixed with light rain; and
 - light ice pellets mixed with moderate rain.

Examples:

- 1) Type IV anti-icing fluid is applied with a start of application time of 10:00, OAT is 0 °C, light ice pellets fall until 10:20 and stop and do not restart. The allowance time stops at 10:50; however, provided that no precipitation restarts after the allowance time of 10:50 the aircraft may takeoff without any further action up to 11:30.
 - 2) Type IV anti-icing fluid is applied with a start of application time of 10:00, OAT is 0 °C, light ice pellets mixed with freezing drizzle falls until 10:10 and stops and restarts at 10:15 and stops at 10:20. The allowance time stops at 10:25, however provided that the OAT remains constant or increases and that no precipitation restarts after the allowance time of 10:25, the aircraft may takeoff without any further action up to 11:30.
 - 3) On the other hand, if Type IV anti-icing fluid is applied with a start of application time of 10:00, OAT is 0 °C, light ice pellets mixed with freezing drizzle falls until 10:10 and stops and restarts at 10:30 with the allowance time stopping at 10:25 the aircraft may not takeoff, no matter how short the time or type of precipitation after 10:25, without being deiced and anti-iced if precipitation is present.
- (c) Operators with a deicing program updated to include the allowance time information contained herein, will be allowed, in the specified ice pellet and small hail conditions listed in Tables 5 and 6, up to the specific allowance time, to commence the takeoff with the following restrictions:
- 1) The aircraft critical surfaces must be free of contaminants before applying anti-icing fluid. If not, the aircraft must be properly deiced and checked to be free of contaminants before the application of anti-icing fluid.
 - 2) The allowance time is valid only if the aircraft is anti-iced with undiluted Type III or Type IV fluid.
 - 3) The Type III allowance times are only applicable for unheated anti-icing fluid applications.
 - 4) Due to the shearing qualities of Type III and Type IV fluids with imbedded ice pellets, allowance times are limited to aircraft with a rotation speed of 100 knots or greater, or 115 knots or greater as indicated in the allowance time tables.
 - 5) If the takeoff is not accomplished within the applicable allowance time, the aircraft must be completely deiced, and if precipitation is still present, anti-iced again prior to a subsequent takeoff. If the precipitation stops at or before the time limits of the applicable allowance time and does not restart, the aircraft may takeoff up to 90 minutes after the start of the application of the Type III or Type IV anti-icing fluid, subject to the restrictions in 2(b) above.

- 6) A pre-takeoff contamination check is not required. The allowance time cannot be extended by an internal or external check of the aircraft critical surfaces.
- 7) If ice pellet precipitation becomes heavier than moderate or if the light ice pellets mixed with other forms of allowable precipitation exceeds the listed intensities or temperature range, the allowance time cannot be used.
- 8) If the temperature decreases below the temperature on which the allowance time was based,
 - a) and the new lower temperature has an associated allowance time for the precipitation condition and the present time is within the new allowance time, then that new time must be used as the allowance time limit.
 - b) and the allowance time has expired (within the 90 minute post anti-icing window if the precipitation has stopped within the allowance time), the aircraft may not takeoff and must be completely deiced and, if applicable, anti-iced before a subsequent takeoff.
- 9) If an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. if light small hail is reported, the "light ice pellets" allowance times can be used. This also applies in mixed conditions, e.g. if light small hail mixed with light snow is reported, use the "light ice pellets mixed with light snow" allowance times.

TABLE 5. ICE PELLETT AND SMALL HAIL ALLOWANCE TIMES FOR SAE TYPE III FLUIDS¹

This table is for use with SAE Type III undiluted (100/0) fluids applied unheated only

Precipitation Type	Outside Air Temperature		
	-5°C and above	Below -5 to -10°C	Below -10°C ²
Light Ice Pellets	10 minutes	10 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light Snow	10 minutes	10 minutes	
Light Ice Pellets Mixed with Moderate Snow	10 minutes	5 minutes	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle	7 minutes	5 minutes	
Light Ice Pellets Mixed with Light Freezing Rain	7 minutes	5 minutes	
Light Ice Pellets Mixed with Light Rain	7 minutes ³		
Light Ice Pellets Mixed with Moderate Rain			
Moderate Ice Pellets (or Small Hail) ⁴	5 minutes	5 minutes	

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

NOTES

- 1 These allowance times are for use with aircraft with rotation speeds of 100 knots or greater.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 No allowance times exist in this condition for temperatures below 0 °C; consider use of light ice pellets mixed with light freezing rain.
- 4 If no intensity is reported with small hail, use the “moderate ice pellets or small hail” allowance times. If an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. if light small hail is reported, the “light ice pellets” allowance times can be used. This also applies in mixed conditions, e.g. if light small hail mixed with light snow is reported, use the “light ice pellets mixed with light snow” allowance times.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.
- Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. The OAT must not decrease during the 90 minutes to use this guidance in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light freezing rain, or light rain.

TABLE 6. ICE PELLETT AND SMALL HAIL ALLOWANCE TIMES FOR SAE TYPE IV FLUIDS¹

This table is for use with SAE Type IV undiluted (100/0) fluids only. All Type IV fluids are propylene glycol based with the exception of Clariant Max Flight AVIA, Clariant Safewing EG IV NORTH, Dow EG106 and LNT E450 which are ethylene glycol based.

Precipitation Type	Outside Air Temperature			
	-5°C and above	Below -5 to -10°C	Below -10 to -16°C	Below -16 to -22°C ²
Light Ice Pellets	50 minutes	30 minutes	30 minutes ³	30 minutes ³
Light Ice Pellets Mixed with Light Snow	40 minutes	15 minutes	15 minutes ³	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Moderate Snow	20 minutes	7 minutes	5 minutes ³	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle	25 minutes	10 minutes	Caution: No allowance times currently exist	
Light Ice Pellets Mixed with Light Freezing Rain	25 minutes	10 minutes		
Light Ice Pellets Mixed with Light Rain	25 minutes ⁴			
Light Ice Pellets Mixed with Moderate Rain	25 minutes ⁵			
Moderate Ice Pellets (or Small Hail) ⁶	25 minutes ⁷	10 minutes	10 minutes ³	
Moderate Ice Pellets (or Small Hail) ⁶ Mixed with Moderate Freezing Drizzle	10 minutes	7 minutes	Caution: No allowance times currently exist	
Moderate Ice Pellets (or Small Hail) ⁶ Mixed with Moderate Rain	10 minutes ⁵		Caution: No allowance times currently exist	

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

NOTES

- 1 These allowance times are for use with aircraft with rotation speeds of 100 knots or greater.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 No allowance times exist for propylene glycol (PG) fluids when used on aircraft with rotation speeds less than 115 knots. (For these aircraft, if the fluid type is not known, assume zero allowance time.)
- 4 No allowance times exist in this condition for temperatures below 0 °C; consider use of light ice pellets mixed with light freezing rain.
- 5 No allowance times exist in this condition for temperatures below 0 °C.
- 6 If no intensity is reported with small hail, use the "moderate ice pellets or small hail" allowance times. If an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. if light small hail is reported, the "light ice pellets" allowance times can be used. This also applies in mixed conditions, e.g. if light small hail mixed with light snow is reported, use the "light ice pellets mixed with light snow" allowance times.
- 7 Allowance time is 15 minutes for propylene glycol (PG) fluids or when the fluid type is unknown.
- 8 No allowance times exist for propylene glycol (PG) fluids in this condition for temperatures below -16 °C.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.
- Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. The OAT must not decrease during the 90 minutes to use this guidance in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light freezing rain, light rain, or moderate rain.

TABLE 7. SNOWFALL INTENSITIES AS A FUNCTION OF PREVAILING VISIBILITY

Time of Day	Temp.		Visibility in Statute Miles (Meters)									
	Degrees Celsius	Degrees Fahrenheit	≥ 2 1/2 (≥ 4000)	2 (3200)	1 3/4 (2800)	1 1/2 (2400)	1 1/4 (2000)	1 (1600)	3/4 (1200)	1/2 (800)	≤ 1/4 (≤ 400)	
Day	colder/equal -1	colder/equal 30	Very Light	Very Light	Very Light	Light	Light	Light	Moderate	Moderate	Heavy	Snowfall Intensity
	warmer than -1	warmer than 30	Very Light	Light	Light	Light	Light	Moderate	Moderate	Heavy	Heavy	
Night	colder/equal -1	colder/equal 30	Very Light	Light	Light	Moderate	Moderate	Moderate	Moderate	Heavy	Heavy	
	warmer than -1	warmer than 30	Very Light	Light	Moderate	Moderate	Moderate	Moderate	Heavy	Heavy	Heavy	

NOTE 1: This table is for estimating snowfall intensity. It is based upon the technical report, "The Estimation of Snowfall Rate Using Visibility," Rasmussen, et al., Journal of Applied Meteorology, October 1999 and additional in situ data.

NOTE 2: This table is to be used with Type I, II, III, and IV fluid guidelines.

NOTE 3: The use of Runway Visual Range (RVR) is not permitted for determining visibility used with the holdover tables.

NOTE 4: Some METARS contain tower visibility as well as surface visibility. Whenever surface visibility is available from an official source, such as a METAR, in either the main body of the METAR or in the Remarks ("RMK") section, the preferred action is to use the surface visibility value.

NOTE 5: If visibility from a source other than the METAR is used, round to the nearest visibility in the table, rounding down if it is right in between two values. For example, .6 and .625 (5/8) would both be rounded to .5 (1/2).

HEAVY = Caution—No Holdover Time Guidelines Exist

During snow conditions alone, the use of Table 7 in determining snowfall intensities does not require pilot company coordination or company reporting procedures since this table is more conservative than the visibility table used by official weather observers in determining snowfall intensities.

Because the FAA Snowfall Intensities Table, like the FMH-1 Table, uses visibility to determine snowfall intensities, if the visibility is being reduced by snow along with other forms of obscuration such as fog, haze, smoke, etc., the FAA Snowfall Intensities Table does not need to be used to estimate the snowfall intensity for HOT determination during the presence of these obscurations. Use of the FAA Snowfall Intensities as a Function of Prevailing Visibility Table under these conditions may needlessly overestimate the actual snowfall intensity. Therefore, the snowfall intensity being reported by the weather observer or automated surface observing system (ASOS), from the FMH-1 Table, may be used.

TABLE 8-1
LIST OF TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	LOWEST OPERATIONAL USE TEMPERATURE ³				
				DILUTION ^{4,5} (FLUID/WATER)	LOW SPEED AERODYNAMIC TEST ⁶		HIGH SPEED AERODYNAMIC TEST ⁶	
					°C	°F	°C	°F
ABAX Industries	DE-950	PG	18-05-01	71/29	-26	-14.8	-31	-23.8
ADDCON EUROPE GmbH	IceFree I.80	PG	17-05-20	70/30	-26	-14.8	-32	-25.6
ALAB Industries	WDF 1	EG	18-04-25	70/30	-40	-40	-45	-49
AllClear Systems LLC	Lift-Off E-188	EG	18-07-15	70/30	-40	-40	-41.5	-42.7
AllClear Systems LLC	Lift-Off P-88	PG	18-06-11	70/30	-24.5	-12.1	-29.5	-21.1
Arcton Ltd.	Arctica DG ready-to-use	DEG	18-06-02	as supplied	-26	-14.8	-26	-14.8
Arcton Ltd.	Arctica DG 91 Concentrate	DEG	17-07-16	75/25	-25 ¹⁴	-13 ¹⁴	-25	-13
AVIAFLUID International Ltd. ¹¹	AVIAFLO EG	EG	16-11-28	70/30	-40.5	-40.9	-44	-47.2
Aviation Shaanxi Hi-Tech Physical Chemical Co. Ltd.	Cleanwing I	PG	19-09-30	75/25	Not tested ¹⁰	Not tested ¹⁰	-39.5	-39.1
Aviation Xi'an High-Tech Physical Chemical Co. Ltd.	KHF-1	PG	19-05-22	75/25	Not tested ¹⁰	Not tested ¹⁰	-38.5	-37.3
<i>Baltic Ground Services¹¹</i>	<i>DEFROSOL ADF</i>	<i>NCG</i>	<i>15-03-18⁹</i>	<i>65/35</i>	<i>-25</i>	<i>-13</i>	<i>-30</i>	<i>-22</i>
Beijing Wangye Aviation Chemical Product Co Ltd.	KLA-1	EG	19-09-08	60/40	Not tested ¹⁰	Not tested ¹⁰	-30.5	-22.9
Beijing Yadilite Aviation Advanced Materials Corporation	YD-101 Type I	PG	17-05-27	60/40	Not tested ¹⁰	Not tested ¹⁰	-30	-22
Beijing Yadilite Aviation Advanced Materials Corporation	YD-101A Type I	EG	17-11-01	70/30	Not tested ¹⁰	Not tested ¹⁰	-38	-36.4
Boryszew S.A.	Borygo Plane I	PG	17-12-04	75/25	-25	-13	-30	-22
CHEMCO Inc.	CHEMR EG I	EG	20-04-01	70/30	-37	-34.6	-43	-45.4
<i>CHEMCO Inc.</i>	<i>CHEMR REG I</i>	<i>EG</i>	<i>16-07-08⁹</i>	<i>75/25</i>	<i>-36</i>	<i>-32.8</i>	<i>-40.5</i>	<i>-40.9</i>
<i>Clariant Produkte (Deutschland) GmbH</i>	<i>EcoFlo Concentrate</i>	<i>NCG</i>	<i>13-07-06⁹</i>	<i>65/35</i>	<i>Not tested¹⁰</i>	<i>Not tested¹⁰</i>	<i>-30.5</i>	<i>-22.9</i>
<i>Clariant Produkte (Deutschland) GmbH</i>	<i>EcoFlo 2 Concentrate</i>	<i>NCG</i>	<i>13-07-25⁹</i>	<i>65/35</i>	<i>Not tested¹⁰</i>	<i>Not tested¹⁰</i>	<i>-29</i>	<i>-20.2</i>
Clariant Produkte (Deutschland) GmbH	Octaflo EF Concentrate	PG	18-03-20	65/35	-25	-13	-33	-27.4
<i>Clariant Produkte (Deutschland) GmbH</i>	<i>Octaflo EF-80</i>	<i>PG</i>	<i>13-12-21⁹</i>	<i>70/30</i>	<i>-25</i>	<i>-13</i>	<i>-33</i>	<i>-27.4</i>
Clariant Produkte (Deutschland) GmbH	Octaflo EG Concentrate	EG	17-07-23	70/30	-40.5	-40.9	-44	-47.2
Clariant Produkte (Deutschland) GmbH	Octaflo LYOD	EG	20-03-16	70/30	-40	-40	-45.5	-49.9
Clariant Produkte (Deutschland) GmbH	Safewing EG I 1996 (88)	EG	19-10-15	70/30	-39.5	-39.1	-41.5	-42.7

TABLE 8-1 (cont'd)
LIST OF TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	LOWEST OPERATIONAL USE TEMPERATURE ³				
				DILUTION ^{4,5} (FLUID/WATER)	LOW SPEED AERODYNAMIC TEST ⁶		HIGH SPEED AERODYNAMIC TEST ⁶	
					°C	°F	°C	°F
Clariant Produkte (Deutschland) GmbH	Safewing MP I 1938 ECO	PG	20-05-11	65/35	-25.5	-13.9	-32	-25.6
Clariant Produkte (Deutschland) GmbH	Safewing MP I 1938 ECO (80)	PG	20-05-20	71/29	-25	-13	-32.5	-26.5
Clariant Produkte (Deutschland) GmbH	Safewing MP I 1938 ECO (80) Premix 55% i.g. ready-to-use	PG	17-03-13	as supplied	Not tested ¹⁰	Not tested ¹⁰	-19	-2.2
Clariant Produkte (Deutschland) GmbH	Safewing MP I ECO PLUS (80)	PG	19-03-13	71/29	-25	-13	-33	-27.4
Cryotech Deicing Technology	Polar Plus [®]	PG	20-01-13	63/37	-27	-16.6	-32	-25.6
Cryotech Deicing Technology	Polar Plus [®] LT	PG	20-01-26	63/37	-27	-16.6	-33	-27.4
Cryotech Deicing Technology	Polar Plus [®] LT (80)	PG	20-04-12	70/30	-27	-16.6	-33	-27.4
Cryotech Deicing Technology	Polar Plus [®] (80)	PG	17-09-12	70/30	-24.5	-12.1	-32.5	-26.5
Deicing Solutions LLC	Safetemp [®] ES Plus (Multiple Location)	PG	18-08-29	65/35	-25.5	-13.9	-31	-23.8
Dow Chemical Company	UCAR [™] ADF Concentrate	EG	19-05-11	75/25	-36	-32.8	-45	-49
Dow Chemical Company	UCAR [™] ADF XL54 ¹⁷	EG	19-05-11	as supplied	-33	-27.4	-33	-27.4
Dow Chemical Company	UCAR [™] PG ADF Concentrate	PG	19-05-11	65/35	-25	-13	-32	-25.6
Dow Chemical Company	UCAR [™] PG ADF Dilute 55/45 ¹⁸	PG	19-05-11	as supplied	-24	-11.2	-25	-13
DR Energy Group LTD.	Northern Guard I	EG	17-06-16	65/35	Not tested ¹⁰	Not tested ¹⁰	-39.5	-39.1
Heilongjiang Hangjie Aero-chemical Technology Co. Ltd.	HJF-1	EG	17-10-02	65/35	Not tested ¹⁰	Not tested ¹⁰	-42	-43.6
Heilongjiang Hangjie Aero-chemical Technology Co. Ltd.	HJF-1A	EG	16-09-02	75/25	Not tested ¹⁰	Not tested ¹⁰	-40.5	-40.9
HOC Industries	SafeTemp [®] ES Plus	PG	20-04-12	65/35	-25.5	-13.9	-29	-20.2
Inland Technologies CANADA Inc.	DuraGly-E Type I ADF Concentrate	EG	19-01-13	60/40	-33	-27.4	-33	-27.4
<i>Inland Technologies CANADA Inc.</i>	<i>DuraGly-P Type I ADF Concentrate</i>	<i>PG</i>	<i>15-02-04⁹</i>	<i>60/40</i>	<i>-25</i>	<i>-13</i>	<i>-25</i>	<i>-13</i>
Inland Technologies CANADA Inc.	Inland ADF Concentrate ¹² (Multiple Location)	EG	Y-M-D ¹²	75/25	-36	-32.8	-42.5	-44.5
Kilfrost Limited	Kilfrost DF Plus	PG	19-07-16	69/31	-25.5	-13.9	-32	-25.6
Kilfrost Limited	Kilfrost DF Plus (80)	PG	20-05-02	69/31	-26	-14.8	-31.5	-24.7
Kilfrost Limited	Kilfrost DF Plus (88)	PG	19-07-16	63/37	-25.5	-13.9	-32	-25.6
Kilfrost Limited	Kilfrost DF ^{Sustain}	NCG	19-08-06	68/32	-34	-29.2	-41	-41.8

TABLE 8-1 (cont'd)

LIST OF TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
(see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	LOWEST OPERATIONAL USE TEMPERATURE ³				
				DILUTION ^{4,5} (FLUID/WATER)	LOW SPEED AERODYNAMIC TEST ⁶		HIGH SPEED AERODYNAMIC TEST ⁶	
					°C	°F	°C	°F
LNT Solutions	LNT E188	EG	17-10-01	70/30	-30.5	-22.9	-41	-41.8
LNT Solutions	LNT P180	PG	17-10-04	69/31	-26	-14.8	-32	-25.6
LNT Solutions	LNT P188	PG	18-11-28	70/30	-24.5	-12.1	-31.5	-24.7
Newave Aerochemical Co. Ltd.	FCY-1A	EG	19-02-20	75/25	-40	-40	-40	-40
<i>Newave Aerochemical Co. Ltd.</i>	<i>FCY-1Bio+</i>	<i>EG</i>	<i>16-07-08¹³</i>	<i>75/25</i>	<i>Not tested¹⁰</i>	<i>Not tested¹⁰</i>	<i>-40.5</i>	<i>-40.9</i>
<i>Oksayd Co. Ltd.</i>	<i>DEFROST ECO 1</i>	<i>NG</i>	<i>16-07-09⁹</i>	<i>70/30</i>	<i>Not tested¹⁰</i>	<i>Not tested¹⁰</i>	<i>-36</i>	<i>-32.8</i>
Oksayd Co. Ltd.	DEFROST EG 88.1	EG	17-09-02	70/30	Not tested ¹⁰	Not tested ¹⁰	-44.5	-48.1
Shaanxi Cleanway Aviation Chemical Co., Ltd	Cleansurface I	EG	17-09-12	75/25	-32.5 ¹⁴	-26.5 ¹⁴	-40.5	-40.9
Shaanxi Cleanway Aviation Chemical Co., Ltd	Cleansurface I-BIO	EG	18-07-11	75/25	Not tested ¹⁰	Not tested ¹⁰	-37	-34.6
Velvana a.s.	AIRVEL OK 1	PG	17-01-28	70/30	-26	-14.8	-30	-22

TABLE 8-2
LIST OF TYPE II FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	DILUTION (FLUID/WATER)	LOWEST OPERATIONAL USE TEMPERATURE ³		LOWEST ON-WING VISCOSITY ^{7,8} (mPa.s)	
					HIGH SPEED AERODYNAMIC TEST ⁶		MANUFACTURER METHOD	AS 9968 METHOD
					°C	°F		
ABAX Industries	Ecowing 26	PG	17-04-28	100/0	-25	-13	4 900 (f)	4 600 (a)
				75/25	-14	7	2 200 (a)	2 200 (a)
				50/50	-3	27	50 (a)	50 (a)
Aviation Shaanxi Hi-Tech Physical Chemical Co. Ltd.	Cleanwing II	PG	17-05-20	100/0	-29	-20.2	4 650 (d)	4 500 (a)
				75/25	-14	7	9 450 (d)	10 000 (a)
				50/50	-3	27	10 150 (d)	10 200 (a)
Beijing Yadilite Aviation Advanced Materials Corporation	YD-102 Type II	PG	18-02-26	100/0	-29	-20.2	4 500 (a)	4 500 (a)
				75/25	-14	7	12 850 (a)	12 850 (a)
				50/50	-3	27	820 (a)	300 (k)
Clariant Produkte (Deutschland) GmbH	Safewing MP II FLIGHT	PG	18-05-11	100/0	-29	-20.2	3 340 (a)	3 340 (a)
				75/25	-14	7	12 900 (c)	12 900 (c)
				50/50	-3	27	11 500 (a)	11 500 (a)
Clariant Produkte (Deutschland) GmbH	Safewing MP II FLIGHT PLUS	PG	18-04-06	100/0	-29	-20.2	3 650 (l)	3 100 (a)
				75/25	-14	7	12 400 (l)	10 450 (a)
				50/50	-3	27	7 800 (l)	7 050 (a)
Cryotech Deicing Technology	Polar Guard® II	PG	17-03-11	100/0	-30.5	-22.9	4 400 (e)	4 050 (a)
				75/25	-14	7	11 600 (e)	9 750 (a)
				50/50	-3	27	80 (a)	80 (a)
Kilfrost Limited	ABC-3	PG	16-10-08	100/0	-27	-16.6	2 500 (d)	2 500 (a)
				75/25	-14	7	2 000 (d)	2 000 (a)
				50/50	-3	27	400 (d)	400 (a)
Kilfrost Limited	ABC-Ice Clear II	PG	17-05-13	100/0	-29.5	-21.1	7 720 (a)	7 720 (a)
				75/25	-14	7	5 660 (a)	5 660 (a)
				50/50	-3	27	580 (a)	558 (k)
Kilfrost Limited	ABC-K Plus	PG	16-11-24	100/0	-29	-20.2	2 850 (d)	2 640 (a)
				75/25	-14	7	12 650 (d)	12 650 (c)
				50/50	-3	27	4 200 (d)	5 260 (a)
Newave Aerochemical Co. Ltd.	FCY-2	PG	17-02-20	100/0	-28	-18.4	7 000 (d)	8 920 (a)
				75/25	-14	7	18 550 (d)	18 550 (c)
				50/50	-3	27	6 750 (d)	7 030 (a)

TABLE 8-2 (cont'd)

LIST OF TYPE II FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
(see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	DILUTION (FLUID/WATER)	LOWEST OPERATIONAL USE TEMPERATURE ³		LOWEST ON-WING VISCOSITY ^{7,8} (mPa.s)	
					HIGH SPEED AERODYNAMIC TEST ⁶		MANUFACTURER METHOD	AS 9968 METHOD
					°C	°F		
Newave Aerochemical Co. Ltd.	FCY-2 Bio+	PG	17-05-06	100/0	-28.5	-19.3	7 210 (a)	7 210 (a)
				75/25	-14	7	21 400 (c)	21 400 (c)
				50/50	-3	27	1 900 (a)	1 900 (a)

TABLE 8-3

LIST OF TYPE III FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE

(see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	DILUTION (FLUID/WATER)	LOWEST OPERATIONAL USE TEMPERATURE ³				LOWEST ON-WING VISCOSITY ^{7,8} (mPa.s)	
					LOW SPEED AERODYNAMIC TEST ⁶		HIGH SPEED AERODYNAMIC TEST ⁶		MANUFACTURER METHOD	AS 9968 METHOD
					°C	°F	°C	°F		
AllClear Systems LLC	AeroClear MAX	EG	16-12-22 ¹⁵	100/0	-16	3.2	-35	-31	7 300 (j)	Not Available ¹⁶
				75/25	Dilution Not Applicable		Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable		Dilution Not Applicable	
Clariant Produkte (Deutschland) GmbH	Safewing MP III 2031 ECO	PG	15-08-15 ⁹	100/0	-16.5	2.3	-29	-20.2	120 (k)	120 (k)
				75/25	-9	15.8	-10	14	86 (k)	86 (k)
				50/50	-3	27	-3	27	16 (k)	16 (k)

TABLE 8-4
LIST OF TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	DILUTION (FLUID/WATER)	LOWEST OPERATIONAL USE TEMPERATURE ³		LOWEST ON-WING VISCOSITY ^{7,8} (mPa.s)	
					HIGH SPEED AERODYNAMIC TEST ⁶		MANUFACTURER METHOD	AS 9968 METHOD
					°C	°F		
ABAX Industries	Ecowing AD-49	PG	18-04-22	100/0	-26	-14.8	12 150 (g)	11 000 (a)
				75/25	-14	7	30 700 (g)	32 350 (c)
				50/50	-3	27	19 450 (g)	21 150 (c)
Clariant Produkte (Deutschland) GmbH	Max Flight 04	PG	16-07-23 ⁹	100/0	-23.5	-10.3	5 540 (b)	5 540 (a)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Clariant Produkte (Deutschland) GmbH	Max Flight AVIA	EG	18-04-25	100/0	-28.5	-19.3	1 000 (k)	1 000 (k)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Clariant Produkte (Deutschland) GmbH	Max Flight SNEG	PG	18-03-09	100/0	-29	-20.2	8 700 (m)	8 050 (a)
				75/25	-14	7	20 200 (n)	21 800 (c)
				50/50	-3	27	13 600(n)	15 000 (c)
Clariant Produkte (Deutschland) GmbH	Safewing EG IV NORTH	EG	18-04-06	100/0	-30	-22	830 (k)	830 (k)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Clariant Produkte (Deutschland) GmbH	Safewing MP IV LAUNCH	PG	18-05-05	100/0	-28.5	-19.3	7 550 (a)	7 550 (a)
				75/25	-14	7	18 000 (a)	18 000 (a)
				50/50	-3	27	17 800 (a)	17 800 (a)
Clariant Produkte (Deutschland) GmbH	Safewing MP IV LAUNCH PLUS	PG	17-03-24	100/0	-29	-20.2	8 700 (m)	8 450 (a)
				75/25	-14	7	18 800 (n)	17 200 (c)
				50/50	-3	27	9 700 (m)	12 150 (a)
Cryotech Deicing Technology	Polar Guard® Advance	PG	17-03-11	100/0	-30.5	-22.9	4 400 (e)	4 050 (a)
				75/25	-14	7	11 600 (e)	9 750 (a)
				50/50	-3	27	80 (a)	80 (a)
Deicing Solutions LLC	ECO-SHIELD®	PG	18-02-22	100/0	-25.5	-13.9	11 050 (a)	11 050 (a)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Dow Chemical Company	UCAR™ Endurance EG106 De/Anti-Icing Fluid	EG	17-05-20	100/0	-27	-16.6	24 850 (h)	2 230 (a)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	

TABLE 8-4 (cont'd)

LIST OF TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE

(see cautions and notes on page 55)

COMPANY NAME	FLUID NAME	TYPE OF GLYCOL ¹	EXPIRY ² (Y-M-D)	DILUTION (FLUID/WATER)	LOWEST OPERATIONAL USE TEMPERATURE ³		LOWEST ON-WING VISCOSITY ^{7,8} (mPa.s)	
					HIGH SPEED AERODYNAMIC TEST ⁶		MANUFACTURER METHOD	AS 9968 METHOD
					°C	°F		
Dow Chemical Company	UCAR™ FlightGuard AD-49	PG	17-05-20	100/0	-26	-14.8	12 150 (g)	11 000 (a)
				75/25	-14	7	30 700 (g)	32 350 (c)
				50/50	-3	27	19 450 (g)	21 150 (c)
Kilfrost Limited	ABC-S Plus	PG	17-06-16	100/0	-28	-18.4	17 900 (d)	17 900 (c)
				75/25	-14	7	18 300 (d)	18 300 (c)
				50/50	-3	27	7 500 (d)	7 500 (a)
LNT Solutions	LNT E450	EG	17-07-29	100/0	-22.5	-8.5	45 300 (i)	Not Available ¹⁶
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Newave Aerochemical Co. Ltd.	FCY 9311	PG	18-01-18	100/0	-29.5	-21.1	14 100 (c)	14 100 (c)
				75/25	Dilution Not Applicable		Dilution Not Applicable	
				50/50	Dilution Not Applicable		Dilution Not Applicable	
Shaanxi Cleanway Aviation Chemical Co., Ltd	Cleansurface IV	PG	17-05-25	100/0	-28.5	-19.3	15 200 (c)	15 200 (c)
				75/25	-14	7	28 500 (c)	28 500 (c)
				50/50	-3	27	17 500 (c)	17 500 (c)

CAUTIONS AND NOTES FOR TABLES 8-1, 8-2, 8-3, 8-4

CAUTIONS

- This table lists fluids that have been tested with respect to anti-icing performance and aerodynamic acceptance (Type I: SAE AMS1424 §3.5.2 and §3.5.3; Type II/ III/ IV: SAE AMS1428 §3.2.4 and §3.2.5) only. These tests were conducted by Anti-icing Materials International Laboratory: www.uqac.ca/ami. The end user is responsible for contacting the fluid manufacturer to confirm all other SAE AMS1424/1428 technical requirement tests, such as fluid stability, toxicity, materials compatibility, etc. have been conducted.
- LOUT data provided in these tables is based strictly on the manufacturer's data; the end user is responsible for verifying the validity of this data.
- Type I fluids supplied in concentrated form must not be used in that form and must be diluted.

NOTES

- PG = conventional glycol (propylene glycol); EG = conventional glycol (ethylene glycol); DEG = conventional glycol (diethylene glycol); NCG = non-conventional glycol (organic non-ionic diols and triols, e.g. 1,3-propanediol, glycerine) and mixtures of non-conventional glycol and conventional glycol; NG = non-glycol (e.g. organic salts) and mixtures of non-glycol and glycol.
- Expiry date is the earlier expiry date of the Aerodynamic Test(s) or Water Spray Endurance Test. Fluids that are tested after the issuance of this list will appear in a later update.
- The values in this table were determined using test results from pre-production fluid samples when available. In some cases, the fluid manufacturer requested the publication of a more conservative value than the pre-production test value. The lowest operational use temperature (LOUT) for a given fluid is the higher (warmer) of:
 - The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type;
 - The actual freezing point of the fluid plus its freezing point buffer (Type I = 10°C/18°F; Type II/III/IV = 7°C/13°F); or
 - For diluted Type II/III/IV fluids, the coldest temperature for which holdover times are published.
- The LOUT for Type I fluids that are intended to be diluted is derived from a dilution that provides the lowest operational use temperature. For other Type I dilutions, determine the freezing point of the fluid and add a 10°C freezing point buffer, as a dilution will usually yield a higher and more restrictive operational use temperature. Consult the fluid manufacturer or fluid documentation for further clarification and guidance on establishing the appropriate operational use temperature of a diluted fluid.
- Type I concentrate fluids have also been tested at 50/50 (glycol/water) dilution.
- If uncertain whether the aircraft to be treated conforms to the low speed or the high speed aerodynamic test, consult the aircraft manufacturer. The aerodynamic test is defined in SAE AS5900 (latest version).
- The viscosity values in this table are those of the fluids provided by the manufacturers for holdover time testing. For the holdover times to be valid, the viscosity of the fluid on the wing shall not be lower than that in this table. The user should periodically ensure that the viscosity of a fluid sample taken from the wing surface is not lower than that listed.
- The SAE AS9968 viscosity method should only be used for field verification and auditing purposes; when in doubt as to which method is appropriate, use the manufacturer method. Viscosity measurement methods are indicated as letters (in parentheses) beside each viscosity value. Details of each measurement method are shown in the table below. The exact measurement method (spindle, container, fluid volume, temperature, speed, duration) must be used to compare the viscosity of a sample to a viscosity given in this table.

Method	Brookfield Spindle*	Container	Fluid Volume	Temp.**	Speed	Duration
a	LV1 (with guard leg)	600 mL low form (Griffin) beaker	575 mL***	20°C	0.3 rpm	10.0 minutes
b	LV1 (with guard leg)	600 mL low form (Griffin) beaker	575 mL***	20°C	0.3 rpm	33.3 minutes
c	LV2-disc (with guard leg)	600 mL low form (Griffin) beaker	425 mL***	20°C	0.3 rpm	10.0 minutes
d	LV2-disc (with guard leg)	150 mL tall form (Berzelius) beaker	135 mL***	20°C	0.3 rpm	10.0 minutes
e	SC4-34/13R	small sample adapter	10 mL	20°C	0.3 rpm	10.0 minutes
f	SC4-34/13R	small sample adapter	10 mL	20°C	0.3 rpm	30.0 minutes
g	SC4-31/13R	small sample adapter	10 mL	20°C	0.3 rpm	10.0 minutes
h	SC4-31/13R	small sample adapter	10 mL	0°C	0.3 rpm	10.0 minutes
i	SC4-31/13R	small sample adapter	9 mL	0°C	0.3 rpm	10.0 minutes
j	SC4-31/13R	small sample adapter	9 mL	0°C	0.3 rpm	30.0 minutes
k	LV0	ultra low adapter	16 mL	20°C	0.3 rpm	10.0 minutes
l	LV1	big sample adapter	50 mL	20°C	0.3 rpm	10.0 minutes
m	LV1	big sample adapter	55 mL	20°C	0.3 rpm	10.0 minutes
n	LV2-disc	big sample adapter	60 mL	20°C	0.3 rpm	10.0 minutes

* Spindle must be attached to a Brookfield viscometer model equipped with an LV spring.

** Sample temperature will affect readings; ensure sufficient time is allowed for sample to reach thermal equilibrium before starting test. Use of a cooling bath strongly recommended.

*** If necessary, adjust fluid volume to ensure fluid is level with notch on the spindle shaft.

- Fluids listed in italics have expired and will be removed from this listing four years after expiry.
- Manufacturer has indicated fluid was not tested.
- Manufacturer has not provided fluid information as required in SAE ARP5718A; fluid may be removed from this listing in subsequent revisions.
- Dow UCAR™ ADF Concentrate, sold under the product name Inland ADF Concentrate, qualified from 2015-09-04.
- Currently in the test/re-test process.
- Fluid was not retested for low speed aerodynamics. This data will be removed four years after the expiry of the last low speed test.
- Fluid did not meet the minimum Water Spray Endurance Test requirement for a Type III fluid in AMS1428G; Transport Canada and the FAA have proposed a change to the SAE G-12 for this requirement.
- Measurements using the SAE AS9968 method do not provide stable, reliable results. Use the manufacturer method to evaluate viscosity.
- For UCAR™ ADF XL54, refer to primary site qualification of UCAR™ ADF Concentrate.
- For UCAR™ PG ADF Dilute 55/45, refer to primary site qualification of UCAR™ PG ADF Concentrate.

TABLE 9. GUIDELINES FOR THE APPLICATION OF SAE TYPE I FLUID

Outside Air Temperature (OAT) ¹	One-Step Procedure De/Anti-icing	Two-Step Procedure	
		First Step: Deicing	Second Step: Anti-icing ²
0 °C (32 °F) and above	Heated mix of fluid and water with a freezing point of at least 10 °C (18 °F) below OAT	Heated water or a heated fluid/water mixture	Heated mix of fluid and water with a freezing point of at least 10 °C (18 °F) below OAT
Below 0 °C (32 °F) to LOUT		Heated fluid/water mixture with a freezing point at OAT or below	

- 1) Fluids must not be used at temperatures below their lowest operational use temperature (LOUT).
- 2) To be applied before first-step fluid freezes, typically within 3 minutes. (This time may be higher than 3 minutes in some conditions, but potentially lower in heavy precipitation, colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)

NOTES:

- This table is applicable for the use of Type I holdover time guidelines in all conditions, including active frost. If holdover times are not required, a temperature of 60 °C (140 °F) at the nozzle is desirable.
- If holdover times are required, the temperature of water or fluid/water mixtures shall be at least 60 °C (140 °F) at the nozzle. Upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.
- To use Type I Holdover Times Guidelines in all conditions including active frost, an additional minimum of 1 litre/m² (~2 gal./100 sq. ft.) of heated Type I fluid mixture must be applied to the surfaces after all frozen contamination is removed. This application is necessary to heat the surfaces, as heat contributes significantly to the Type I fluid holdover times. The required protection can be provided using a 1-step method by applying more fluid than is strictly needed to just remove all of the frozen contamination (the same additional amount stated above is required).
- The lowest operational use temperature (LOUT) for a given Type I fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type, or
 - b) The actual freezing point of the fluid plus a freezing point buffer of 10 °C (18 °F).

CAUTION:

- **Wing skin temperatures may differ and, in some cases, be lower than OAT. A stronger mix (more glycol) may be needed under these conditions.**

**TABLE 10. GUIDELINES FOR THE APPLICATION OF SAE TYPE II AND IV FLUID
(FLUID CONCENTRATIONS IN % VOLUME)**

Outside Air Temperature (OAT) ¹	One-Step Procedure De/Anti-icing	Two-Step Procedure	
		First Step: Deicing	Second Step: Anti-icing ²
0 °C (32 °F) and above	100/0, 75/25 or 50/50 Heated ³ Type II or IV fluid/water mixture	Heated water or a heated Type I, II, III, or IV fluid/water mixture	100/0, 75/25 or 50/50 Type II or IV fluid/water mixture
Below 0 °C (32 °F) to -3°C (27°F)	100/0, 75/25 or 50/50 Heated ³ Type II or IV fluid/water mixture	Heated Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0, 75/25 or 50/50 Type II or IV fluid/water mixture
Below -3 °C (27 °F) to -14 °C (7 °F)	100/0 or 75/25 Heated ³ Type II or IV fluid/water mixture	Heated Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 or 75/25 Type II or IV fluid/water mixture
Below -14 °C (7 °F) to LOU ^T	100/0 Heated ³ Type II or IV fluid/water mixture	Heated Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 Type II or IV fluid/water mixture

- 1) Fluids must not be used at temperatures below their lowest operational use temperature (LOUT). Consideration should be given to the use of Type I/III fluid when Type II/IV fluid cannot be used due to LOU^T limitations (see Table 9, 11-U, 11-H). The LOU^T for a given Type II/IV fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type;
 - b) The actual freezing point of the fluid plus its freezing point buffer of 7 °C (13 °F); or
 - c) For diluted Type II/IV fluids, the coldest temperature for which holdover times are published.
- 2) To be applied before first step fluid freezes, typically within 3 minutes. (Time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)
- 3) Clean aircraft may be anti-iced with unheated fluid.

NOTES:

- For heated fluids, a fluid temperature not less than 60 °C (140 °F) at the nozzle is desirable.
- Upper temperature limit shall not exceed fluid and aircraft manufacturer’s recommendations.

CAUTIONS:

- **Wing skin temperatures may differ and in some cases may be lower than OAT. A stronger mix (more glycol) may be needed under these conditions.**
- **Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.**
- **An insufficient amount of anti-icing fluid, especially in the second step of a two-step procedure, may cause a substantial loss of holdover time, particularly when using a Type I fluid mixture for the first step (deicing) of a two-step procedure.**

TABLE 11-H. GUIDELINES FOR THE APPLICATION OF HEATED SAE TYPE III FLUID (FLUID CONCENTRATIONS IN % VOLUME)

Outside Air Temperature (OAT) ¹	One-Step Procedure De/Anti-icing	Two-Step Procedure	
		First Step: Deicing	Second Step: Anti-icing ²
0°C (32°F) and above	100/0, 75/25 or 50/50 Heated Type III fluid/water mixture	Heated ³ water or a heated ³ Type I, II, III, or IV fluid/water mixture	100/0, 75/25 or 50/50 Heated Type III fluid/water mixture
Below 0°C (32°F) to -3°C (27°F)	100/0, 75/25 or 50/50 Heated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0, 75/25 or 50/50 Heated Type III fluid/water mixture
Below -3°C (27°F) to -10°C (14°F)	100/0 or 75/25 Heated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 or 75/25 Heated Type III fluid/water mixture
Below -10°C (14°F) to LOUT	100/0 Heated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 Heated Type III fluid/water mixture

- 1 Fluids must not be used at temperatures below their lowest operational use temperature (LOUT). Consider the use of Type I when Type III fluid cannot be used (see Table 9). The LOUT for a given Type III fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type;
 - b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F); or
 - c) For diluted Type III fluid, the coldest temperature for which holdover times are published.
- 2 To be applied before first step fluid freezes, typically within 3 minutes. (Time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)
- 3 For heated fluids, a fluid temperature not less than 60°C (140°F) at the nozzle is desirable.

NOTES

- To use Type III Holdover Times Guidelines in all conditions including active frost, an additional minimum of 1 litre/m² (~2 gal./100 sq. ft.) of heated Type III fluid mixture must be applied to the surfaces after all frozen contamination is removed. This application is necessary to heat the surfaces, as heat contributes significantly to the Type III fluid holdover times. The required protection can be provided using a 1-step method by applying more fluid than is strictly needed to just remove all of the frozen contamination (the same additional amount stated above is required).
- If holdover times are required, the temperature of fluid/water mixtures shall be at least 60°C (140°F) at the nozzle. Upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.

CAUTIONS

- **Wing skin temperatures may differ and in some cases may be lower than outside air temperatures; a stronger mix (more glycol) may be needed under these conditions.**
- **Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold soaked wing, the 50/50 dilutions of Type III shall not be used for the anti-icing step because fluid freezing may occur.**
- **An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure.**

TABLE 11-U. GUIDELINES FOR THE APPLICATION OF UNHEATED SAE TYPE III FLUID (FLUID CONCENTRATIONS IN % VOLUME)

Outside Air Temperature (OAT) ¹	One-Step Procedure Anti-icing Only ⁴	Two-Step Procedure	
		First Step: Deicing	Second Step: Anti-icing ²
0°C (32°F) and above	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture	Heated ³ water or a heated ³ Type I, II, III, or IV fluid/water mixture	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture
Below 0°C (32°F) to -3°C (27°F)	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture
Below -3°C (27°F) to -10°C (14°F)	100/0 or 75/25 Unheated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 or 75/25 Unheated Type III fluid/water mixture
Below -10°C (14°F) to LOUT	100/0 Unheated Type III fluid/water mixture	Heated ³ Type I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 Unheated Type III fluid/water mixture

- 1 Fluids must not be used at temperatures below their lowest operational use temperature (LOUT). Consider the use of Type I when Type III fluid cannot be used (see Table 9). The LOUT for a given Type III fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type;
 - b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F); or
 - c) For diluted Type III fluid, the coldest temperature for which holdover times are published.
- 2 To be applied before first step fluid freezes, typically within 3 minutes. (This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)
- 3 For heated fluids, a fluid temperature not less than 60°C (140°F) at the nozzle is desirable.
- 4 One-step procedure with unheated Type III fluid is only possible on a clean aircraft. If deicing is required, a two-step procedure must be used.

NOTES

- Upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.

CAUTIONS

- **Wing skin temperatures may differ and in some cases may be lower than outside air temperatures; a stronger mix (more glycol) may be needed under these conditions.**
- **Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold soaked wing, the 50/50 dilutions of Type III shall not be used for the anti-icing step because fluid freezing may occur.**
- **An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure.**

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 0-90%. 90 PERCENT ADJUSTED HOLDOVER TIME GUIDELINES FOR SAE TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS IN ACTIVE FROST

Outside Air Temperature ^{1,2}		Approximate Holdover Times (hours:minutes)
Degrees Celsius	Degrees Fahrenheit	Active Frost
		Type I
-1 and above	30 and above	0:41 (0:32) ⁴
below -1 to -3	below 30 to 27	
below -3 to -10	below 27 to 14	
below -10 to -14	below 14 to 7	
below -14 to -21	below 7 to -6	
below -21 to LOUT	below -6 to LOUT	

Outside Air Temperature ²		Concentration Neat Fluid/Water (Volume %/ Volume %)	Approximate Holdover Times (hours:minutes)		
Degrees Celsius	Degrees Fahrenheit		Active Frost		
			Type II	Type III ³	Type IV
-1 and above	30 and above	100/0	7:12	1:48	10:48
		75/25	4:30	0:54	4:30
		50/50	2:42	0:27	2:42
below -1 to -3	below 30 to 27	100/0	7:12	1:48	10:48
		75/25	4:30	0:54	4:30
		50/50	1:21	0:27	2:42
below -3 to -10	below 27 to 14	100/0	7:12	1:48	9:00
		75/25	4:30	0:54	4:30
below -10 to -14	below 14 to 7	100/0	5:24	1:48	5:24
		75/25	0:54	0:54	0:54
below -14 to -21	below 7 to -6	100/0	5:24	1:48	5:24
below -21 to -25	below -6 to -13	100/0	1:48	1:48	3:36
Below -25	Below -13	No holdover time guidelines exist			

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

- 1 Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated. Clariant Safewing MP III 2031 ECO must be applied heated.
- 4 Value in parentheses is for aircraft with critical surfaces that are predominantly or entirely constructed of composite materials.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 1A-90%. 90 PERCENT ADJUSTED HOLDOVER TIME GUIDELINES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM

Outside Air Temperature ^{1,2}		Wing Surface	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	Aluminum	0:10-0:15	0:16-0:20	0:10-0:16	0:05-0:10	0:08-0:12	0:02-0:05	0:02-0:05	CAUTION: No holdover time guidelines exist
below -3 to -6	below 27 to 21	Aluminum	0:07-0:12	0:13-0:15	0:07-0:13	0:05-0:07	0:05-0:08	0:02-0:05		
below -6 to -10	below 21 to 14	Aluminum	0:05-0:09	0:10-0:12	0:05-0:10	0:04-0:05	0:04-0:06	0:02-0:05		
Below -10	below 14	Aluminum	0:05-0:08	0:06-0:07	0:04-0:06	0:02-0:04				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 1C-90%. 90 PERCENT ADJUSTED HOLDOVER TIME GUIDELINES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF COMPOSITES

Outside Air Temperature ^{1,2}		Wing Surface	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	Composite	0:08-0:14	0:11-0:14	0:05-0:11	0:03-0:05	0:07-0:12	0:02-0:05	0:01-0:05	CAUTION: No holdover time guidelines exist
below -3 to -6	below 27 to 21	Composite	0:05-0:07	0:10-0:12	0:05-0:10	0:02-0:05	0:05-0:08	0:02-0:05		
below -6 to -10	below 21 to 14	Composite	0:04-0:07	0:08-0:11	0:05-0:08	0:02-0:05	0:04-0:06	0:02-0:05		
Below -10	below 14	Composite	0:04-0:06	0:06-0:07	0:04-0:06	0:02-0:04				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2-GENERIC-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
SAE TYPE II FLUID

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
-3 and above	27 and above	100/0	0:32-1:21	0:18-0:41	0:27-0:54	0:14-0:27	0:06-0:36	CAUTION: No holdover time guidelines exist
		75/25	0:23-0:50	0:14-0:23	0:14-0:36	0:09-0:18	0:04-0:23	
		50/50	0:14-0:23	0:05-0:09	0:07-0:14	0:05-0:08		
below -3 to -14	below 27 to 7	100/0	0:18-0:59	0:14-0:27	0:18-0:41 ⁷	0:09-0:18 ⁷		
		75/25	0:23-0:45	0:07-0:18	0:14-0:23 ⁷	0:07-0:14 ⁷		
Below -14 to LOU	Below 7 to LOU	100/0	0:18-0:32 ⁸	0:07-0:09 ⁸				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOU) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).
- 8 If the LOU is unknown, no holdover time guidelines exist below -22.5 °C (-8.5 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2A-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
ABAX ECOWING 26

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:17-2:20	1:26-1:39	0:54-1:26	0:36-0:54	0:45-1:26	0:36-0:45	0:18-1:17	CAUTION: No holdover time guidelines exist
		75/25	0:59-1:44	1:08-1:17	0:41-1:08	0:23-0:41	0:41-0:59	0:23-0:32	0:09-0:54	
		50/50	0:27-0:41	0:36-0:45	0:18-0:36	0:09-0:18	0:14-0:23	0:07-0:09		
below -3 to -14	below 27 to 7	100/0	0:41-2:02	1:17-1:30	0:50-1:17	0:32-0:50	0:27-1:03 ⁷	0:14-0:32 ⁷		
		75/25	0:32-1:08	0:50-0:59	0:36-0:50	0:23-0:36	0:18-0:45 ⁷	0:14-0:23 ⁷		
below -14 to -25	below 7 to -13	100/0	0:23-0:41	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2B-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
AVIATION SHAANXI HI-TECH CLEANWING II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	0:50-1:39	0:27-0:50	0:32-0:59	0:23-0:32	0:09-0:50	CAUTION: No holdover time guidelines exist
		75/25	0:45-1:12	0:23-0:41	0:32-0:54	0:18-0:27	0:06-0:45	
		50/50	0:32-0:54	0:14-0:27	0:18-0:36	0:09-0:18		
below -3 to -14	below 27 to 7	100/0	0:41-1:39	0:27-0:50	0:27-0:50 ⁷	0:18-0:23 ⁷		
		75/25	0:36-1:35	0:23-0:41	0:32-0:36 ⁷	0:18-0:23 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:18-0:45	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2C-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
BEIJING YADILITE AVIATION YD-102 TYPE II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:03-1:48	1:30-1:48	0:45-1:30	0:23-0:45	0:36-1:08	0:32-0:36	0:09-0:54	CAUTION: No holdover time guidelines exist
		75/25	0:23-0:50	0:45-0:59	0:23-0:45	0:14-0:23	0:14-0:36	0:09-0:18	0:04-0:23	
		50/50	0:14-0:23	0:23-0:27	0:09-0:23	0:05-0:09	0:07-0:14	0:06-0:08		
below -3 to -14	below 27 to 7	100/0	0:41-1:21	0:54-1:08	0:27-0:54	0:14-0:27	0:32-0:45 ⁷	0:23-0:23 ⁷		
		75/25	0:27-0:45	0:32-0:41	0:18-0:32	0:07-0:18	0:14-0:23 ⁷	0:08-0:14 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:18-0:41	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2D-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING MP II FLIGHT

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:09-3:36	2:20-2:47	1:26-2:20	0:54-1:26	1:12-1:48	0:41-1:17	0:09-1:21	CAUTION: No holdover time guidelines exist
		75/25	1:39-2:29	2:20-2:51	1:12-2:20	0:36-1:12	1:03-1:21	0:27-0:50	0:05-0:45	
		50/50	0:50-1:35	0:41-0:50	0:23-0:41	0:09-0:23	0:18-0:27	0:09-0:14		
below -3 to -14	below 27 to 7	100/0	0:50-1:35	1:39-1:57	0:59-1:39	0:36-0:59	0:32-1:21 ⁷	0:23-0:41 ⁷		
		75/25	0:23-0:59	1:12-1:30	0:36-1:12	0:18-0:36	0:23-1:03 ⁷	0:18-0:32 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:27-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2E-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING MP II FLIGHT PLUS

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	2:24-3:36	0:45-1:39	1:17-1:48	0:41-0:54	0:14-1:48	CAUTION: No holdover time guidelines exist
		75/25	2:20-3:36	0:54-1:35	1:26-1:48	0:45-1:08	0:14-1:08	
		50/50	0:59-2:06	0:14-0:23	0:27-0:59	0:14-0:18		
below -3 to -14	below 27 to 7	100/0	0:36-2:06	0:32-1:08	0:32-1:17 ⁷	0:32-0:50 ⁷		
		75/25	0:27-1:35	0:50-1:30	0:23-1:03 ⁷	0:27-0:41 ⁷		
Below -14 to -29	Below 7 to -20.2	100/0	0:18-0:36	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2F-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
CRYOTECH POLAR GUARD® II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
		Very Light ³		Light ³	Moderate					
-3 and above	27 and above	100/0	2:33-3:36	2:20-2:33	1:39-2:20	1:12-1:39	1:26-1:48	1:08-1:21	0:14-1:48	CAUTION: No holdover time guidelines exist
		75/25	2:15-3:36	2:11-2:38	1:12-2:11	0:41-1:12	1:30-1:48	0:36-1:03	0:08-1:30	
		50/50	0:45-1:17	1:12-1:35	0:32-1:12	0:14-0:32	0:18-0:41	0:08-0:18		
below -3 to -14	below 27 to 7	100/0	0:50-2:15	1:35-1:44	1:08-1:35	0:50-1:08	0:32-1:26 ⁷	0:32-0:41 ⁷		
		75/25	0:36-1:21	1:35-1:53	0:54-1:35	0:32-0:54	0:23-0:59 ⁷	0:32-0:41 ⁷		
Below -14 to -30.5	Below 7 to -22.9	100/0	0:23-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2G-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
KILFROST ABC-ICE CLEAR II

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	0:54-1:35	1:35-1:57	0:45-1:35	0:23-0:45	0:36-0:59	0:23-0:32	0:06-0:41	CAUTION: No holdover time guidelines exist
		75/25	0:45-1:03	1:12-1:35	0:36-1:12	0:18-0:36	0:27-0:41	0:18-0:27	0:05-0:32	
		50/50	0:14-0:27	0:18-0:23	0:14-0:18	0:07-0:14	0:09-0:18	0:06-0:09		
below -3 to -14	below 27 to 7	100/0	0:36-1:26	1:08-1:26	0:32-1:08	0:18-0:32	0:23-0:54 ⁷	0:14-0:27 ⁷		
		75/25	0:36-1:12	0:50-1:03	0:23-0:50	0:14-0:23	0:23-0:41 ⁷	0:14-0:18 ⁷		
Below -14 to -29.5	Below 7 to -21.1	100/0	0:18-0:36	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 2H-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
KILFROST ABC-K PLUS

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					Other ⁶
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	
-3 and above	27 and above	100/0	2:02-3:23	0:54-1:30	1:39-1:48	0:54-1:17	0:18-1:48	CAUTION: No holdover time guidelines exist
		75/25	1:30-2:15	0:32-1:03	1:17-1:48	0:45-1:03	0:14-1:48	
		50/50	0:32-0:59	0:06-0:14	0:18-0:27	0:09-0:14		
below -3 to -14	below 27 to 7	100/0	0:27-0:59	0:45-1:17	0:23-0:54 ⁷	0:14-0:32 ⁷		
		75/25	0:23-1:17	0:32-0:59	0:18-0:50 ⁷	0:08-0:27 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:27-0:50	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 21-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR
NEWAVE AEROCHEMICAL FCY-2

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)					
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ^{2,3}	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
-3 and above	27 and above	100/0	1:08-2:11	0:27-0:50	0:32-0:59	0:23-0:32	0:07-0:41	CAUTION: No holdover time guidelines exist
		75/25	0:45-1:21	0:18-0:36	0:23-0:41	0:14-0:23	0:05-0:23	
		50/50	0:23-0:32	0:14-0:23	0:09-0:18	0:06-0:09		
below -3 to -14	below 27 to 7	100/0	0:41-1:21	0:14-0:27	0:18-0:41 ⁷	0:14-0:18 ⁷		
		75/25	0:27-0:59	0:09-0:18	0:14-0:27 ⁷	0:07-0:14 ⁷		
below -14 to -28	below 7 to -18.4	100/0	0:23-0:32	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 2J-90%. 90 PERCENT ADJUSTED TYPE II HOLDOVER TIME GUIDELINES FOR NEWAVE AEROCHEMICAL FCY-2 BIO+

Outside Air Temperature ¹		Type II Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
		Very Light ³		Light ³	Moderate					
-3 and above	27 and above	100/0	1:17-2:15	2:06-2:38	0:59-2:06	0:27-0:59	0:45-1:12	0:23-0:41	0:07-1:08	CAUTION: No holdover time guidelines exist
		75/25	0:41-1:12	1:12-1:30	0:36-1:12	0:18-0:36	0:23-0:45	0:14-0:23	0:05-0:32	
		50/50	0:14-0:27	0:23-0:27	0:14-0:23	0:07-0:14	0:09-0:18	0:07-0:09		
below -3 to -14	below 27 to 7	100/0	0:36-1:21	0:54-1:08	0:27-0:54	0:14-0:27	0:32-0:59 ⁷	0:14-0:27 ⁷		
		75/25	0:27-0:59	0:32-0:41	0:18-0:32	0:07-0:18	0:18-0:32 ⁷	0:14-0:18 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:18-0:54	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 3A-LS-90%. 90 PERCENT ADJUSTED LOW SPEED TYPE III HOLDOVER TIME GUIDELINES FOR ALLCLEAR AEROCLEAR MAX, APPLIED UNHEATED¹

FOR AIRCRAFT CONFORMING TO THE SAE AS5900 LOW SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:41-1:03	0:54-1:08	0:27-0:54	0:13-0:27	0:18-0:41	0:13-0:18	0:05-0:36	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10	below 27 to 14	100/0	0:41-1:17	0:54-1:08	0:27-0:54	0:13-0:27	0:18-0:36	0:14-0:23		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -16	below 14 to 3.2	100/0	0:27-0:59	0:54-1:08	0:27-0:54	0:13-0:27				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 3A-HS-90%. 90 PERCENT ADJUSTED HIGH SPEED TYPE III HOLDOVER TIME GUIDELINES FOR ALLCLEAR AEROCLEAR MAX, APPLIED UNHEATED¹

FOR AIRCRAFT CONFORMING TO THE SAE AS5900 HIGH SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:41-1:03	0:54-1:08	0:27-0:54	0:13-0:27	0:18-0:41	0:13-0:18	0:05-0:36	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10	below 27 to 14	100/0	0:41-1:17	0:54-1:08	0:27-0:54	0:13-0:27	0:18-0:36	0:14-0:23		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -25	below 14 to -13	100/0	0:27-0:59	0:54-1:08	0:27-0:54	0:13-0:27				
below -25 to -35	below -13 to -31	100/0	0:14-0:36	0:36-0:45	0:17-0:36	0:08-0:17				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 5-90% provides allowance times for ice pellets and small hail).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 3B-LS-90%. 90 PERCENT ADJUSTED LOW SPEED TYPE III HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP III 2031 ECO, APPLIED HEATED¹

FOR AIRCRAFT CONFORMING TO THE SAE AS5900 LOW SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:23-0:45	0:36-0:50	0:18-0:36	0:09-0:18	0:15-0:27	0:09-0:13	0:05-0:27	CAUTION: No holdover time guidelines exist
		75/25	0:17-0:36	0:32-0:41	0:14-0:32	0:06-0:14	0:12-0:18	0:07-0:08	0:03-0:16	
		50/50	0:12-0:16	0:23-0:27	0:12-0:23	0:06-0:12	0:12-0:13	0:06-0:06		
below -3 to -10	below 27 to 14	100/0	0:32-1:08	0:36-0:45	0:18-0:36	0:09-0:18	0:13-0:27	0:08-0:12		
		75/25	0:17-0:41 ⁸	0:23-0:32 ⁸	0:11-0:23 ⁸	0:05-0:11 ⁸	0:08-0:14 ⁸	0:05-0:07 ⁸		
below -10 to -16.5	below 14 to 2.3	100/0	0:23-0:41	0:36-0:41	0:17-0:36	0:08-0:17				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied heated to use these holdover times. No holdover times exist for this fluid applied unheated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 8 No holdover time guidelines exist for 75/25 fluid below -9 °C (15.8 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 3B-HS-90%. 90 PERCENT ADJUSTED HIGH SPEED TYPE III HOLDOVER TIME GUIDELINES FOR CLARIANT SAFEWING MP III 2031 ECO, APPLIED HEATED¹

FOR AIRCRAFT CONFORMING TO THE SAE AS5900 HIGH SPEED AERODYNAMIC TEST CRITERION

Outside Air Temperature ²		Type III Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ³			Freezing Drizzle ⁵	Light Freezing Rain	Rain on Cold Soaked Wing ⁶	Other ⁷
				Very Light ⁴	Light ⁴	Moderate				
-3 and above	27 and above	100/0	0:23-0:45	0:36-0:50	0:18-0:36	0:09-0:18	0:15-0:27	0:09-0:13	0:05-0:27	CAUTION: No holdover time guidelines exist
		75/25	0:17-0:36	0:32-0:41	0:14-0:32	0:06-0:14	0:12-0:18	0:07-0:08	0:03-0:16	
		50/50	0:12-0:16	0:23-0:27	0:12-0:23	0:06-0:12	0:12-0:13	0:06-0:06		
below -3 to -10	below 27 to 14	100/0	0:32-1:08	0:36-0:45	0:18-0:36	0:09-0:18	0:13-0:27	0:08-0:12		
		75/25	0:17-0:41	0:23-0:32	0:11-0:23	0:05-0:11	0:08-0:14	0:05-0:07		
below -10 to -25	below 14 to -13	100/0	0:23-0:41	0:36-0:41	0:17-0:36	0:08-0:17				
below -25 to -29	below -13 to 20.2	100/0	0:23-0:41	0:36-0:41	0:17-0:36	0:08-0:17				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Fluid must be applied heated to use these holdover times. No holdover times exist for this fluid applied unheated.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 4 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 5 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 6 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 7 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 5-90% provides allowance times for ice pellets and small hail).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4-GENERIC-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
SAE TYPE IV FLUIDS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:08-2:24	2:06-2:29	1:03-2:06	0:32-1:03	0:36-1:21	0:32-0:36	0:07-1:17	CAUTION: No holdover time guidelines exist
		75/25	1:17-2:24	1:53-2:02	1:08-1:53	0:41-1:08	0:45-1:12	0:27-0:41	0:08-1:08	
		50/50	0:23-0:45	0:36-0:41	0:23-0:36	0:14-0:23	0:14-0:27	0:08-0:14		
below -3 to -14	below 27 to 7	100/0	0:18-1:26	1:12-1:30	0:41-1:12	0:23-0:41	0:23-1:12 ⁷	0:18-0:23 ⁷		
		75/25	0:27-1:03	1:30-1:48	0:41-1:30	0:18-0:41	0:14-0:59 ⁷	0:14-0:23 ⁷		
below -14 to -26	below 7 to -14.8	100/0	0:18-0:36 ⁸	0:18-0:23 ⁸	0:09-0:18 ⁸	0:07-0:09 ⁸				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).
- 8 If the LOUT is unknown, no holdover time guidelines exist below -22.5 °C (-8.5 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4A-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
ABAX ECOWING AD-49

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:00-3:36	2:33-2:51	1:39-2:33	1:03-1:39	1:17-1:48	0:54-1:17	0:09-1:44	CAUTION: No holdover time guidelines exist
		75/25	2:11-3:36	1:53-2:02	1:30-1:53	1:12-1:30	1:44-1:48	0:45-1:21	0:09-1:30	
		50/50	0:23-0:45	0:36-0:41	0:23-0:36	0:14-0:23	0:14-0:27	0:09-0:14		
below -3 to -14	below 27 to 7	100/0	0:18-1:26	2:33-2:51	1:39-2:33	1:03-1:39	0:23-1:17 ⁷	0:18-0:23 ⁷		
		75/25	0:27-1:03	1:53-2:02	1:30-1:53	1:12-1:30	0:14-0:59 ⁷	0:14-0:23 ⁷		
below -14 to -26	below 7 to -14.8	100/0	0:23-0:36	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4B-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT MAX FLIGHT 04

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:24-3:36	3:00-3:00	2:29-3:00	1:17-2:29	1:48-1:48	1:03-1:21	0:18-1:48	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	0:45-2:15	2:06-2:33	1:03-2:06	0:32-1:03	0:23-1:21 ⁷	0:18-0:36 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -23.5	below 7 to -10.3	100/0	0:18-0:41	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4C-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT MAX FLIGHT AVIA

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:47-3:36	2:42-3:00	1:35-2:42	0:54-1:35	1:17-1:48	0:50-1:03	0:08-1:48	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:35-3:32	1:57-2:20	1:08-1:57	0:36-1:08	1:03-1:48 ⁷	0:50-1:21 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -28.5	below 7 to -19.3	100/0	0:32-1:17	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4D-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT MAX FLIGHT SNEG

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:11-3:36	2:29-2:51	1:30-2:29	0:59-1:30	1:48-1:48	0:45-1:30	0:18-1:21	CAUTION: No holdover time guidelines exist
		75/25	3:36-3:36	2:11-2:33	1:21-2:11	0:50-1:21	1:21-1:48	0:59-1:12	0:14-1:35	
		50/50	1:21-3:09	1:35-2:06	0:41-1:35	0:18-0:41	0:32-1:03	0:14-0:27		
below -3 to -14	below 27 to 7	100/0	0:41-2:06	1:48-2:06	1:08-1:48	0:41-1:08	0:27-1:17 ⁷	0:23-0:36 ⁷		
		75/25	0:27-1:17	1:30-1:48	0:54-1:30	0:36-0:54	0:18-0:59 ⁷	0:18-0:36 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:18-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4E-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING EG IV NORTH

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:06-3:32	2:42-3:00	1:30-2:42	0:45-1:30	1:21-1:48	0:45-0:50	0:07-1:48	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:35-3:36	2:29-3:00	1:21-2:29	0:45-1:21	0:59-1:39 ⁷	0:50-1:17 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -30	below 7 to -22	100/0	0:36-1:12	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4F-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:36-3:36	2:33-3:00	1:35-2:33	0:59-1:35	1:21-1:48	0:54-1:30	0:14-1:30	CAUTION: No holdover time guidelines exist
		75/25	3:18-3:36	2:47-3:00	1:35-2:47	0:54-1:35	1:30-1:48	0:41-1:08	0:09-1:35	
		50/50	1:17-2:29	1:17-1:30	0:41-1:17	0:23-0:41	0:27-0:45	0:18-0:23		
below -3 to -14	below 27 to 7	100/0	0:54-1:44	1:57-2:15	1:12-1:57	0:45-1:12	0:32-1:30 ⁷	0:23-0:41 ⁷		
		75/25	0:36-1:12	2:11-2:38	1:17-2:11	0:41-1:17	0:23-1:03 ⁷	0:23-0:41 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:27-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4G-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CLARIANT SAFEWING MP IV LAUNCH PLUS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:32-3:36	3:00-3:00	1:53-3:00	0:50-1:53	1:48-1:48	0:54-1:48	0:18-1:48	CAUTION: No holdover time guidelines exist
		75/25	3:32-3:36	3:00-3:00	1:44-3:00	0:45-1:44	1:48-1:48	1:12-1:17	0:18-1:39	
		50/50	1:08-1:39	1:26-1:48	0:41-1:26	0:18-0:41	0:23-0:54	0:14-0:18		
below -3 to -14	below 27 to 7	100/0	0:50-2:02	2:56-3:00	1:17-2:56	0:36-1:17	0:23-1:26 ⁷	0:23-0:36 ⁷		
		75/25	0:36-1:48	2:38-3:00	1:08-2:38	0:27-1:08	0:18-0:59 ⁷	0:18-0:27 ⁷		
below -14 to -29	below 7 to -20.2	100/0	0:23-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4H-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
CRYOTECH POLAR GUARD® ADVANCE

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:33-3:36	2:20-2:33	1:39-2:20	1:12-1:39	1:26-1:48	1:08-1:21	0:14-1:48	CAUTION: No holdover time guidelines exist
		75/25	2:15-3:36	2:11-2:38	1:12-2:11	0:41-1:12	1:30-1:48	0:36-1:03	0:08-1:30	
		50/50	0:45-1:17	1:12-1:35	0:32-1:12	0:14-0:32	0:18-0:41	0:08-0:18		
below -3 to -14	below 27 to 7	100/0	0:50-2:15	1:35-1:44	1:08-1:35	0:50-1:08	0:32-1:26 ⁷	0:32-0:41 ⁷		
		75/25	0:36-1:21	1:35-1:53	0:54-1:35	0:32-0:54	0:23-0:59 ⁷	0:32-0:41 ⁷		
Below -14 to -30.5	Below 7 to -22.9	100/0	0:23-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4I-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
DEICING SOLUTIONS ECO-SHIELD®

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:08-2:24	2:11-2:33	1:12-2:11	0:41-1:12	0:36-1:21	0:32-0:36	0:14-1:26	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:03-2:20	1:44-2:02	0:59-1:44	0:32-0:59	0:45-1:17 ⁷	0:27-0:36 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -25.5	below 7 to -13.9	100/0	0:27-0:54	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4J-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
DOW CHEMICAL UCAR™ ENDURANCE EG106

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:53-2:51	2:29-3:00	1:12-2:29	0:36-1:12	1:03-1:48	0:45-1:08	0:18-1:48	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:39-3:00	1:57-2:29	0:59-1:57	0:27-0:59	0:50-1:39 ⁷	0:41-1:03 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -27	below 7 to -16.6	100/0	0:27-0:59	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4K-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
DOW CHEMICAL UCAR™ FLIGHTGUARD AD-49

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	3:00-3:36	2:33-2:51	1:39-2:33	1:03-1:39	1:17-1:48	0:54-1:17	0:09-1:44	CAUTION: No holdover time guidelines exist
		75/25	2:11-3:36	1:53-2:02	1:30-1:53	1:12-1:30	1:44-1:48	0:45-1:21	0:09-1:30	
		50/50	0:23-0:45	0:36-0:41	0:23-0:36	0:14-0:23	0:14-0:27	0:09-0:14		
below -3 to -14	below 27 to 7	100/0	0:18-1:26	2:33-2:51	1:39-2:33	1:03-1:39	0:23-1:17 ⁷	0:18-0:23 ⁷		
		75/25	0:27-1:03	1:53-2:02	1:30-1:53	1:12-1:30	0:14-0:59 ⁷	0:14-0:23 ⁷		
below -14 to -26	below 7 to -14.8	100/0	0:23-0:36	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4L-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
KILFROST ABC-S PLUS

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:57-3:36	3:00-3:00	1:53-3:00	1:08-1:53	1:39-1:48	0:59-1:48	0:23-1:48	CAUTION: No holdover time guidelines exist
		75/25	1:17-2:24	1:53-2:11	1:08-1:53	0:41-1:08	0:54-1:12	0:27-0:45	0:09-1:12	
		50/50	0:27-0:50	0:54-1:03	0:27-0:54	0:14-0:27	0:14-0:36	0:14-0:18		
below -3 to -14	below 27 to 7	100/0	0:50-3:09	2:38-3:00	1:35-2:38	0:54-1:35	0:23-1:26 ⁷	0:18-0:27 ⁷		
		75/25	0:41-1:39	1:35-1:48	0:54-1:35	0:32-0:54	0:18-1:03 ⁷	0:14-0:23 ⁷		
below -14 to -28	below 7 to -18.4	100/0	0:36-0:54	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4M-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
LNT SOLUTIONS E450

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:39-2:38	2:11-2:29	1:26-2:11	0:54-1:26	1:26-1:48	0:50-1:12	0:23-1:48	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	1:21-3:32	1:39-1:53	1:03-1:39	0:41-1:03	1:35-1:48 ⁷	0:59-1:30 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -22.5	below 7 to -8.5	100/0	0:32-0:59	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 4N-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
NEWAVE AEROCHEMICAL FCY 9311

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	1:44-3:36	2:06-2:38	1:03-2:06	0:32-1:03	1:03-1:48	0:36-0:59	0:14-1:17	CAUTION: No holdover time guidelines exist
		75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -14	below 27 to 7	100/0	0:32-1:53	1:26-1:48	0:45-1:26	0:23-0:45	0:32-1:12 ⁷	0:18-0:32 ⁷		
		75/25	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -29.5	below 7 to -21.1	100/0	0:27-0:50	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING
TABLE 40-90%. 90 PERCENT ADJUSTED TYPE IV HOLDOVER TIME GUIDELINES FOR
SHAANXI CLEANWAY AVIATION CLEANSURFACE IV

Outside Air Temperature ¹		Type IV Fluid Concentration Neat-Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							
Degrees Celsius	Degrees Fahrenheit		Freezing Fog or Ice Crystals	Snow, Snow Grains or Snow Pellets ²			Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing ⁵	Other ⁶
				Very Light ³	Light ³	Moderate				
-3 and above	27 and above	100/0	2:33-3:36	3:00-3:00	1:44-3:00	0:54-1:44	1:48-1:48	1:17-1:21	0:14-1:48	CAUTION: No holdover time guidelines exist
		75/25	2:20-3:36	3:00-3:00	1:26-3:00	0:41-1:26	0:45-1:48	0:32-0:41	0:08-1:08	
		50/50	0:59-2:11	1:30-2:06	0:36-1:30	0:14-0:36	0:23-0:45	0:14-0:18		
below -3 to -14	below 27 to 7	100/0	0:54-2:47	1:12-1:30	0:41-1:12	0:23-0:41	0:32-1:35 ⁷	0:18-0:32 ⁷		
		75/25	0:45-1:44	1:30-1:57	0:41-1:30	0:18-0:41	0:27-1:12 ⁷	0:23-0:36 ⁷		
below -14 to -28.5	below 7 to -19.3	100/0	0:27-0:45	0:18-0:23	0:09-0:18	0:07-0:09				

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 7) is required.
- 3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
- 4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 6-90% provides allowance times for ice pellets and small hail).
- 7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS:

- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING

TABLE 5-90%. 90 PERCENT ADJUSTED ICE PELLET AND SMALL HAIL ALLOWANCE TIMES FOR SAE TYPE III FLUIDS¹

This table is for use with SAE Type III undiluted (100/0) fluids applied unheated only

Precipitation Type	Outside Air Temperature		
	-5°C and above	Below -5 to -10°C	Below -10°C ²
Light Ice Pellets	9 minutes	9 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light Snow	9 minutes	9 minutes	
Light Ice Pellets Mixed with Moderate Snow	9 minutes	5 minutes	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle	6 minutes	5 minutes	
Light Ice Pellets Mixed with Light Freezing Rain	6 minutes	5 minutes	
Light Ice Pellets Mixed with Light Rain	6 minutes ³		
Light Ice Pellets Mixed with Moderate Rain			
Moderate Ice Pellets (or Small Hail) ⁴	5 minutes	5 minutes	

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

NOTES

- 1 These allowance times are for use with aircraft with rotation speeds of 100 knots or greater.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 No allowance times exist in this condition for temperatures below 0 °C; consider use of light ice pellets mixed with light freezing rain.
- 4 If no intensity is reported with small hail, use the “moderate ice pellets or small hail” allowance times. If an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. if light small hail is reported, the “light ice pellets” allowance times can be used. This also applies in mixed conditions, e.g. if light small hail mixed with light snow is reported, use the “light ice pellets mixed with light snow” allowance times.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.
- Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. The OAT must not decrease during the 90 minutes to use this guidance in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light freezing rain, or light rain.

**THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED
PRIOR TO DE/ANTI-ICING**

**TABLE 6-90%. 90 PERCENT ADJUSTED ICE PELLET AND SMALL HAIL
ALLOWANCE TIMES FOR SAE TYPE IV FLUIDS¹**

This table is for use with SAE Type IV undiluted (100/0) fluids only. All Type IV fluids are propylene glycol based with the exception of Clariant Max Flight AVIA, Clariant Safewing EG IV NORTH, Dow EG106 and LNT E450 which are ethylene glycol based.

Precipitation Type	Outside Air Temperature			
	-5°C and above	Below -5 to -10°C	Below -10 to -16°C	Below -16 to -22°C ²
Light Ice Pellets	45 minutes	27 minutes	27 minutes ³	27 minutes ³
Light Ice Pellets Mixed with Light Snow	36 minutes	14 minutes	14 minutes ³	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Moderate Snow	18 minutes	6 minutes	5 minutes ³	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle	23 minutes	9 minutes	Caution: No allowance times currently exist	
Light Ice Pellets Mixed with Light Freezing Rain	23 minutes	9 minutes		
Light Ice Pellets Mixed with Light Rain	23 minutes ⁴	Caution: No allowance times currently exist		
Light Ice Pellets Mixed with Moderate Rain	23 minutes ⁵			
Moderate Ice Pellets (or Small Hail) ⁶	23 minutes ⁷	9 minutes	9 minutes ³	
Moderate Ice Pellets (or Small Hail) ⁶ Mixed with Moderate Freezing Drizzle	9 minutes	6 minutes	Caution: No allowance times currently exist	
Moderate Ice Pellets (or Small Hail) ⁶ Mixed with Moderate Rain	9 minutes ⁵			

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

NOTES

- 1 These allowance times are for use with aircraft with rotation speeds of 100 knots or greater.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected.
- 3 No allowance times exist for propylene glycol (PG) fluids when used on aircraft with rotation speeds less than 115 knots. (For these aircraft, if the fluid type is not known, assume zero allowance time.)
- 4 No allowance times exist in this condition for temperatures below 0 °C; consider use of light ice pellets mixed with light freezing rain.
- 5 No allowance times exist in this condition for temperatures below 0 °C.
- 6 If no intensity is reported with small hail, use the "moderate ice pellets or small hail" allowance times. If an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. if light small hail is reported, the "light ice pellets" allowance times can be used. This also applies in mixed conditions, e.g. if light small hail mixed with light snow is reported, use the "light ice pellets mixed with light snow" allowance times.
- 7 Allowance time is 14 minutes for propylene glycol (PG) fluids or when the fluid type is unknown.
- 8 No allowance times exist for propylene glycol (PG) fluids in this condition for temperatures below -16 °C.

CAUTIONS:

- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.
- Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. The OAT must not decrease during the 90 minutes to use this guidance in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light freezing rain, light rain, or moderate rain.