

DISPERSANT AIRCRAFT CAPABILITY FORM

PLATFORM

**LOCKHEED
HERCULES**
U.S. Air Force Reserve
C-130 H with MASS*



* Modular Aerial Spray System (MASS)

DATA SOURCE LEGEND

1. (Black): Indicates the data are based on documented field trials or is a fixed design value
2. (Blue): Indicates the data are based on limited field observations or operator's stated practice or stated value (little or no documentation)
3. (Red): Indicates the data are based on reasonable calculations or performance of comparable systems

		Unit	U.S. Regulatory Calculation Values	Data Source 1-2-3	Range	Reference(s)
AIRCRAFT PARAMETERS						
1*	Swath Width	feet	65	1	50-70	See Other Comments 1*
	a. Application (gallons per acre)	gpa	5	1	1-20	See Other Comments 1*
	b. Altitude	feet	100	1	100	U.S. Air Force Reserve Youngstown, Ohio See Other Comment 1b*
	c. Application Speed	knots	200	1	170-200	U.S. Air Force Reserve. See Other Comment 1c*
	d. Pump Rate (gallons per minute)	gpm	232	2	50-450	US Air Force Reserve
	e. Boom Pressure (pounds/square inch)	psi	-----	3	12-45	Estimated from similar spray systems
2	Transit Speed at Altitude From Base to Staging Airport	knots feet	290 >10,000	2	250-300 >10,000	U.S. Air Force Reserve
3	Transit Speed at Altitude Staging Airport to/from spill	knots feet	290 <10,000	2	250-300 <10,000	U.S. Air Force Reserve

4	Dispersant Spraying Reposition Speed	knots	200	2	170-200	U.S. Air Force Reserve Youngstown, Ohio
5	Time to Fully Load Dispersant Tank	min	30	2	20-90	U.S. Air Force Reserve
6	Time to Fully Load Fuel Tanks	min	50	2	30-90	U.S. Air Force Reserve
7	Load Dispersant & Fuel simultaneously (Yes/No)	-----	NO	1	NO	USAF Reserve. See Other Comments 5*-6*
8	Time to Make U-turn (Turn 180 degrees)	min	1.75	2	1.0-2.0	U.S. Air Force Reserve
9	Dispersant Payload Maximum	gal	2,000	1	2,000	U.S. Air Force Reserve. See Other Comments 9*
10	Fuel with maximum dispersant payload	lbs	38,500	2	38,500	U.S. Air Force Reserve
11	Approach Distance for spraying	nm	1.0	2	1.0-2.0	U.S. Air Force Reserve
12	Departure Distance for spraying	nm	1.0	2	1.0-1.5	U.S. Air Force Reserve
13	Taxi Time Take-Off	min	15	2	10-30	U.S. Air Force Reserve
14	Taxi Time Landing	min	15	2	10-30	U.S. Air Force Reserve
15	On-site Check-In/Safety Time	min	10	2	5-15	Exercise observation
CASCADE PARAMETERS*						
16	Take-off with Maximum Payload and Maximum Take-off Weight (assume no wind and VFR fuel reserve)					
	a. Maximum Flight Time	hours	5.7	2	5.7	U.S. Air Force Reserve
	b. Maximum Flight Range	nm	1,650	2	1,425- 1,880	U.S. Air Force Reserve
	c. Optimal Altitude	feet	>20,000	2	>20,000	Lynden Air Cargo
	d. True Air Speed	knots	290	2	250-330	U.S. Air Force Reserve
	e. Fuel Consumption	lbs/ hour	5,500	2	4,541- 5,500	U.S. Air Force Reserve Lynden Air Cargo
17	Take-Off with Maximum Fuel and No Payload (assume no wind and VFR fuel reserve)					
	a. Maximum Flight Time	hours	8.2	2	6.0-8.2	U.S. Air Force Reserve
	b. Maximum Flight Range	nm	2,380	2	1,680- 2,706	U.S. Air Force Reserve
	c. Optimal Altitude	feet	>20,000	2	>20,000	Lynden Air Cargo
	d. True Air Speed	knots	290	2	280-330	U.S. Air Force Reserve
	e. Fuel Consumption	lbs/ hour	5,000	2	4,541- 5,000	Lynden Air Cargo
18	Staging area briefing	min	45	2	30-60	Exercise observation
AIRPORT PARAMETERS						
19	Runway length - Minimum (For take-off at maximum gross weight assuming sea level, 90° F, no wind using a balanced field concept, i.e., go, no go speed)	feet	6,500	2	6,500	U.S. Air Force Reserve Youngstown, Ohio
20	Runway weight restrictions for maximum aircraft weight	lbs	155,000	1	155,00	U.S. Air Force Reserve Youngstown, Ohio

	OTHER COMMENTS
1*	References: 1. Information from USAFR for their spray system based on field testing using collector cards 2. MSRC Technical Report Series 94-019 "Aerial Dispersant Application: Field Testing Research Program," Alpine, Texas 1994.
1b*	U.S. Air Force Reserve flight procedures for applying dispersant require an application altitude of 100 feet and 200 knots
1c*	U.S. Air Force Reserve flight procedures for applying dispersant require an application altitude of 100 feet and 200 knots
5*- 6*	The time to load dispersants and fuel are stand alone times independent of each other. If item 7 indicates that fuel and dispersants can be loaded simultaneously, then the longer of fuel or dispersant load time is used in the capability calculations. If item 7 indicates fuel and dispersants can NOT be loaded simultaneously, then the times are added together to calculate the aircrafts capability. To load simultaneously depends upon the airport, aircraft, and support crew. The loading times depend upon the loading system i.e., 5000 tank truck, 55 gallon drums or other means and the pumping system used. The time shown in items 5 and 6 is for loading from a tank truck which is standing by ready to commence loading when the aircraft comes to a stop in the loading area, i.e. the fastest loading time possible.
9*	Dispersant payload is limited by the design of the dispersant tanks as the tank system is used for other applications. The C-130 can carry a much heavier payload.
16*	USAF regulations require aircraft to be over the field with a minimum of 7,000 pounds of fuel. (38,500 – 7,000 = 31,500 lbs. 31,500#/5,500 (#per hour) = 5.73 hours)
*	Cascade Parameters: The aircraft's calculated capability when cascading uses the same fuel loading and taxi times for dispersant operations as listed in items 6, 13 and 14.