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Dry Ice Calculation charts: Unicooler – RAP (LD9)

Program 1 = Set point 5°C

Unicooler RAP Program 1:	(+2°C to +8°C) (35,6°F to 46,4°F)	DRY ICE CALCULATION > SET 5°C	Min. DRY ICE amounts required in Kg (10Kg Block Ice, unwrapped)

Hours	AMBIENT TEMPERATURE																													
	-20°C Kg	-4°F Lbs	-15°C Kg	5°F Lbs	-10°C Kg	14°F Lbs	-5°C Kg	23°F Lbs	0°C Kg	32°F Lbs	5°C Kg	41°F Lbs	10°C Kg	50°F Lbs	15°C Kg	59°F Lbs	20°C Kg	68°F Lbs	25°C Kg	77°F Lbs	30°C Kg	86°F Lbs	35°C Kg	95°F Lbs	40°C Kg	104°F Lbs	45°C Kg	113°F Lbs	50°C Kg	122°F Lbs
5	3	7	4	9	5	11	6	13	7	14	7	16	8	18	9	20	10	22	11	24	12	26	13	28	13	29	14	32	15	34
10	6	14	8	18	10	21	11	25	13	29	15	33	17	36	18	40	20	44	22	48	23	51	25	55	27	59	29	63	31	67
15	9	21	12	26	15	32	17	38	20	43	22	49	25	55	27	61	30	66	32	71	35	77	38	83	40	88	43	95	46	101
20	13	28	16	35	19	43	23	50	26	58	30	66	33	73	37	81	40	88	43	95	47	103	50	111	53	118	57	126	61	135
25 (24Hrs Re-Ice amount)	16	35	20	44	24	53	29	63	33	72	37	82	41	91	46	101	50	110	54	119	58	128	63	138	67	147	72	158	77	169
30	19	42	24	53	29	64	34	75	39	87	45	99	50	109	55	121	60	132	65	143	70	154	75	166	80	177	86	189	92	202
35	22	49	28	62	34	75	40	88	46	101	52	115	58	127	64	141	70	154	76	167	82	180	88	194	93	206	100	221	107	236
40	25	56	32	71	39	86	46	101	52	116	60	131	66	146	73	161	80	176	86	191	93	206	100	221	107	235	114	252	122	270
45	28	63	36	79	44	96	51	113	59	130	67	148	74	164	82	182	90	197	97	214	105	231	113	249	120	265	129	284	138	304
50	32	69	40	88	49	107	57	126	66	144	75	164	83	182	92	202	100	219	108	238	117	257	126	277	134	294	143	315	153	337
55	35	76	44	97	53	118	63	138	72	159	82	181	91	200	101	222	109	241	119	262	128	283	138	304	147	324	157	347	168	371
60	38	83	48	106	58	128	68	151	79	173	89	197	99	218	110	242	119	263	130	286	140	308	151	332	160	353	172	378	184	405
65	41	90	52	115	63	139	74	163	85	188	97	214	107	236	119	262	129	285	140	310	151	334	163	360	174	383	186	410	199	439
70	44	97	56	123	68	150	80	176	92	202	104	230	116	255	128	282	139	307	151	333	163	360	176	387	187	412	200	441	214	472
75	47	104	60	132	73	160	86	189	98	217	112	246	124	273	137	303	149	329	162	357	175	385	188	415	200	442	215	473	230	506
80	50	111	64	141	78	171	91	201	105	231	119	263	132	291	146	323	159	351	173	381	186	411	201	443	214	471	229	505	245	540
85	54	118	68	150	82	182	97	214	111	246	127	279	140	309	156	343	169	373	184	405	198	437	213	470	227	500	243	536	260	574
90	57	125	72	159	87	192	103	226	118	260	134	296	149	327	165	363	179	395	194	429	210	462	226	498	240	530	257	568	275	607
95	60	132	76	168	92	203	108	239	124	274	142	312	157	346	174	383	189	417	205	452	221	488	238	526	254	559	272	599	291	641
100	63	139	80	176	97	214	114	251	131	289	149	329	165	364	183	404	199	439	216	476	233	514	251	553	267	589	286	631	306	675

Dry Ice Calculation charts: Unicooler – RAP (LD9)

Program 2 = Set point 20°C

Unicooler RAP Program 2:	(+15°C to +25°C) (59°F to 77°F)	DRY ICE CALCULATION > SET 20°C	Min. DRY ICE amounts required in Kg (10Kg Block Ice, unwrapped)

Hours	AMBIENT TEMPERATURE																													
	-20°C Kg	-4°F Lbs	-15°C Kg	5°F Lbs	-10°C Kg	14°F Lbs	-5°C Kg	23°F Lbs	0°C Kg	32°F Lbs	5°C Kg	41°F Lbs	10°C Kg	50°F Lbs	15°C Kg	59°F Lbs	20°C Kg	68°F Lbs	25°C Kg	77°F Lbs	30°C Kg	86°F Lbs	35°C Kg	95°F Lbs	40°C Kg	104°F Lbs	45°C Kg	113°F Lbs	50°C Kg	122°F Lbs
5	1	3	2	4	2	5	3	6	3	7	4	8	8	18	9	19	9	20	10	21	10	22	11	23	11	24	11	25	12	26
10	2	4	4	8	5	11	6	13	7	15	8	17	16	36	17	38	18	40	19	42	20	44	21	47	22	49	23	51	24	53
15	2	5	6	13	7	16	9	19	10	22	12	25	24	54	26	57	27	60	29	63	30	67	32	70	33	73	34	76	36	79
20	3	6	8	17	10	21	12	26	13	30	15	34	33	72	35	76	37	81	38	84	40	89	42	93	44	98	46	101	48	106
25 (24Hrs Re-Ice amount)	3	8	10	21	12	27	15	32	17	37	19	42	41	90	43	95	46	101	48	106	50	111	53	116	55	122	57	127	60	132
30	4	9	12	25	15	32	17	39	20	44	23	51	49	108	52	114	55	121	57	127	60	133	63	140	66	146	69	152	72	159
35	4	10	13	30	17	37	20	45	23	52	27	59	57	126	60	133	64	141	67	148	70	155	74	163	77	171	80	177	84	185
40	5	11	15	34	19	43	23	51	27	59	31	68	65	144	69	152	73	161	77	169	81	178	84	186	88	195	92	203	96	212
45	5	12	17	38	22	48	26	58	30	67	35	76	73	162	78	171	82	181	86	190	91	200	95	210	99	219	103	228	108	238
50	6	13	19	42	24	53	29	64	34	74	39	85	81	179	86	190	91	201	96	211	101	222	106	233	111	244	115	253	120	264
55	6	14	21	47	27	59	32	71	37	81	42	93	90	197	95	209	100	221	105	232	111	244	116	256	122	268	126	279	132	291
60	7	15	23	51	29	64	35	77	40	89	46	102	98	215	104	228	110	242	115	253	121	266	127	279	133	293	138	304	144	317
65	7	16	25	55	31	69	38	84	44	96	50	110	106	233	112	248	119	262	124	274	131	289	137	303	144	317	149	330	156	344
70	8	17	27	59	34	75	41	90	47	104	54	119	114	251	121	267	128	282	134	295	141	311	148	326	155	341	161	355	168	370
75	8	18	29	64	36	80	44	96	50	111	58	127	122	269	130	286	137	302	144	317	151	333	158	349	166	366	172	380	180	397
80	9	20	31	68	39	85	47	103	54	118	62	136	130	287	138	305	146	322	153	338	161	355	169	373	177	390	184	406	192	423
85	9	21	33	72	41	91	50	109	57	126	65	144	138	305	147	324	155	342	163	359	171	377	180	396	188	414	195	431	204	449
90	10	22	35	76	44	96	52	116	60	133	69	153	147	323	155	343	164	362	172	380	181	399	190	419	199	439	207	456	216	476
95	10	23	37	81	46	101	55	122	64	141	73	161	155	341	164	362	173	383	182	401	191	422	201	442	210	463	218	482	228	502
100	11	24	39	85	48	107	58	129	67	148	77	170	163	359	173	381	183	403	191	422	201	444	211	466	221	488	230	507	240	529

How to read the Dry Ice Calculation charts
Unicooler – RAP (LD9)

Based on the example of a door-to-door transportation of 51hours the following amount of dry ice will be the minimum required:

Unicooler RAP	(+2°C to +8°C) (35.6°F to 46.4°F)		DRY ICE CALCULATION > SET 5°C								Mi
						AMBIENT TEMPERATURE					
Hours	-20°C Kg	-15°C Kg	-10°C Kg	-5°C Kg	0°C Kg	5°C Kg	10°C Kg	15°C Kg	20°C Kg	25°C Kg	30°C Kg
5	4,0	[illegible]	5,0	6,0	7,0	8,0	9,0	10,0	10,0	11,0	12,0
10	7,0	[illegible]	10,0	12,0	14,0	15,0	17,0	19,0	20,0	22,0	24,0
15	10,0	[illegible]	15,0	18,0	20,0	23,0	25,0	28,0	30,0	33,0	35,0
20	13,0	16,0	20,0	23,0	27,0	30,0	33,0	37,0	40,0	44,0	47,0
25 (24Hrs Re-ice amount)	*16,0*	*20,0*	*25,0*	*29,0*	*33,0*	*38,0*	*42,0*	*46,0*	*50,0*	*54,0*	*59,0*
30	19,0	24,0	30,0	35,0	40,0	45,0	50,0	56,0	60,0	65,0	70,0
35	23,0	28,0	34,0	40,0	46,0	53,0	58,0	65,0	70,0	76,0	82,0
40	26,0	32,0	39,0	46,0	53,0	60,0	[illegible]	74,0	80,0	87,0	94,0
45	29,0	36,0	44,0	52,0	59,0	68,0	[illegible]	83,0	90,0	98,0	105,0
50	32,0	40,0	49,0	57,0	66,0	75,0	83,0	92,0	100,0	108,0	117,0
55	35,0	44,0	54,0	63,0	73,0	82,0	91,0	101,0	110,0	119,0	129,0
60	38,0	48,0	59,0	69,0	79,0	90,0	99,0	110,0	120,0	130,0	140,0
65	41,0	52,0	64,0	75,0	86,0	97,0	108,0	119,0	130,0	141,0	152,0
70	45,0	56,0	68,0	80,0	92,0	105,0	116,0	129,0	140,0	152,0	164,0
75	48,0	60,0	73,0	86,0	99,0	112,0	124,0	138,0	150,0	162,0	175,0
80	51,0	64,0	78,0	92,0	105,0	120,0	132,0	147,0	160,0	173,0	187,0
85	54,0	68,0	83,0	97,0	112,0	127,0	141,0	156,0	170,0	184,0	199,0
90	57,0	72,0	88,0	103,0	118,0	135,0	149,0	165,0	180,0	195,0	210,0
95	60,0	76,0	93,0	109,0	125,0	142,0	157,0	174,0	190,0	206,0	222,0
100	63,0	80,0	97,0	114,0	131,0	149,0	165,0	183,0	199,0	216,0	233,0

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- (1) Select the duration of the calculated door-to-door transportation.
  If no exact value shown select always the next higher value.
- (2) Select the average ‘Ambient Temperature (+15 ° C)
- (3) Retrieve from chart the minimum amount of dry ice required
- **Important Note:**
  Higher amounts of dry ice have no negative effect on the goods as long as unit has been programmed and sufficient battery capacities available!

  If considered necessary dry ice compartment can always be loaded to the maximum.

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Dry Ice Types

	Dry Ice Blocks – 10kg each unwrapped		Dry Ice Slices – 2kg each unwrapped
	Dry Ice Blocks – 5kg each unwrapped		Dry Ice Slices – 2kg each wrapped
	Dry Ice Blocks – 10kg each wrapped		Dry Ice Slices – 2kg each (Plastic bags)
Intentionally left blank	Intentionally left blank		Dry Ice Pellets / Nuggets
	Dry Ice Powder NOT to be used!		'Blue Ice' (Water ice) NOT to be used!