

TEMPERATURE

TEMPERATURE CONVERSION TABLE

°C	°F	°C	°F	°C	°F
-10	14	20	68	130	266
-9	16	21	70	140	284
-8	18	22	72	150	302
-7	19	23	73	160	320
-6	21	24	75	170	338
-5	23	25	77	180	356
-4	25	26	79	190	374
-3	27	27	81	200	392
-2	28	28	82	225	437
-1	30	29	84	250	482
0	32	30	86	275	527
1	34	32	90	300	572
2	36	34	93	325	617
3	37	36	97	350	662
4	39	38	100	375	707
5	41	40	104	400	752
6	43	42	108	425	797
7	45	44	111	450	842
8	46	46	115	475	887
9	48	48	118	500	932
10	50	50	122	525	977
11	52	55	131	550	1022
12	54	60	140	575	1067
13	55	65	149	600	1112
14	57	70	158	625	1157
15	59	75	167	650	1202
16	61	85	185	675	1247
17	63	95	203	700	1292
18	64	100	212	725	1337
19	66	110	230	750	1382
20	68	120	248	775	1427

To convert

From

To

Calculate

Celsius

Fahrenheit

$(9/5 * ^\circ\text{C}) + 32$

Fahrenheit

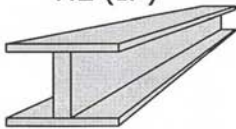
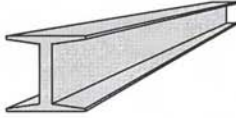
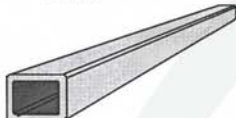
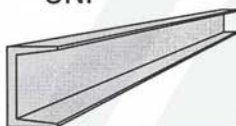
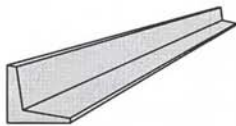
Celsius

$5/9 * (^\circ\text{F} - 32)$



ESTIMATING SIZE OF SURFACES

BEAMS and PROFILES

Designation/ Shape	Size	Weight kg/m	Surface Area	
			sqm/m	sqm/ton
 HE (IP)	100	20.4	0.57	27.8
	160	42.6	0.92	21.5
	220	71.5	1.27	17.8
	280	103.0	1.62	15.7
	360	142.0	1.85	13.0
	600	212.0	2.32	10.9
 INP	80	5.94	0.30	51.2
	140	14.3	0.50	35.1
	200	26.2	0.71	27.1
	260	41.9	0.91	21.6
	340	68.0	1.15	16.9
	400	92.4	1.33	14.4
 RHS	20x20	1.1	0.08	70.8
	30x30	1.8	0.12	68.6
	40x40	2.4	0.16	67.2
	60x60	3.6	0.24	66.0
	80x80	7.3	0.32	44.1
 UNP	30	4.3	0.17	40.7
	50	5.6	0.23	41.5
	80	8.6	0.31	36.1
	180	22.0	0.61	27.8
	280	41.8	0.89	21.3
	400	71.8	1.18	16.4
	20x3	0.88	0.08	87.5
	25x4	1.5	0.10	66.9
	30x4	1.8	0.12	65.2
	40x4	2.4	0.16	64.1
	50x6	4.5	0.19	43.4
	50x9	6.5	0.19	30.0
	75x7	7.9	0.29	36.7
	75x10	11.1	0.29	26.2
	100x10	15.1	0.39	25.8
	100x16	23.2	0.39	16.8
	150x15	33.8	0.59	17.3

VOLUME SOLIDS by THINNING

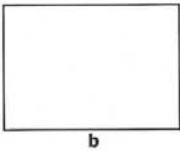
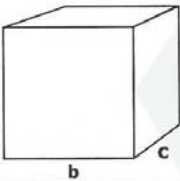
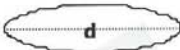
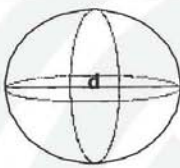
The volume solids of a paint is affected by thinning. The more thinning - the lower volume solids of the affected paint.

Below is given the resulting volume solids for typical thinning ratios:

DATASHEET VOLUME SOLIDS (%)	% THINNING							
	2,5	5	7,5	10	12,5	15	17,5	20
	RESULTING VOLUME SOLIDS (%)							
20	20	19	19	18	18	17	17	17
25	24	24	23	23	22	22	21	21
30	29	29	28	27	27	26	26	25
35	34	33	33	32	31	30	30	29
40	39	38	37	36	36	35	34	33
45	44	43	42	41	40	39	38	38
50	49	48	47	45	44	43	43	42
55	54	52	51	50	49	48	47	46
60	59	57	56	55	53	52	51	50
65	63	62	60	59	58	57	55	54
70	68	67	65	64	62	61	60	58
75	73	71	70	68	67	65	64	63
80	78	76	74	73	71	70	68	67
85	83	81	79	77	76	74	72	71
90	88	86	84	82	80	78	77	75
95	93	90	88	86	84	83	81	79
100	98	95	93	91	89	87	85	83

ESTIMATING SIZE OF SURFACES

SIMPLE SHAPES

Designation	Shape	Area
Squares Rectangles		$a * b$ (if coating on both sides, multiply by 2)
Cubes		$[(a * b) + (a * c) + (b * c)] * 2$ (if coating on both sides, multiply by 2)
Circular Flat		$3.14 * r * r$ $r = d/2$ (if coating on both sides, multiply by 2)
Spheres		$3.14 * d * d$ (if coating on both sides, multiply by 2)
Cylindrical Tanks		$3.14 * d * h + 1.57 * d * d$ (if coating on both sides, multiply by 2)

AIRLESS SPRAY PRESSURE LOSS IN AIRLESS HOSES

Pressure loss or pressure drop in airless hoses can be very significant.

It depends on the flow rate of the paint through the hose, i.e.. faster flow equals higher pressure drop

Below is given the approximate pressure loss pr 10 m spray hose for three types of paint:

Paint A: Low viscosity e.g. shopprimers

Paint B: Medium viscosity e.g. alkyds, waterborne acrylics and enamels in general.

Paint C: High viscosity e.g. most high build paints and solventless paints

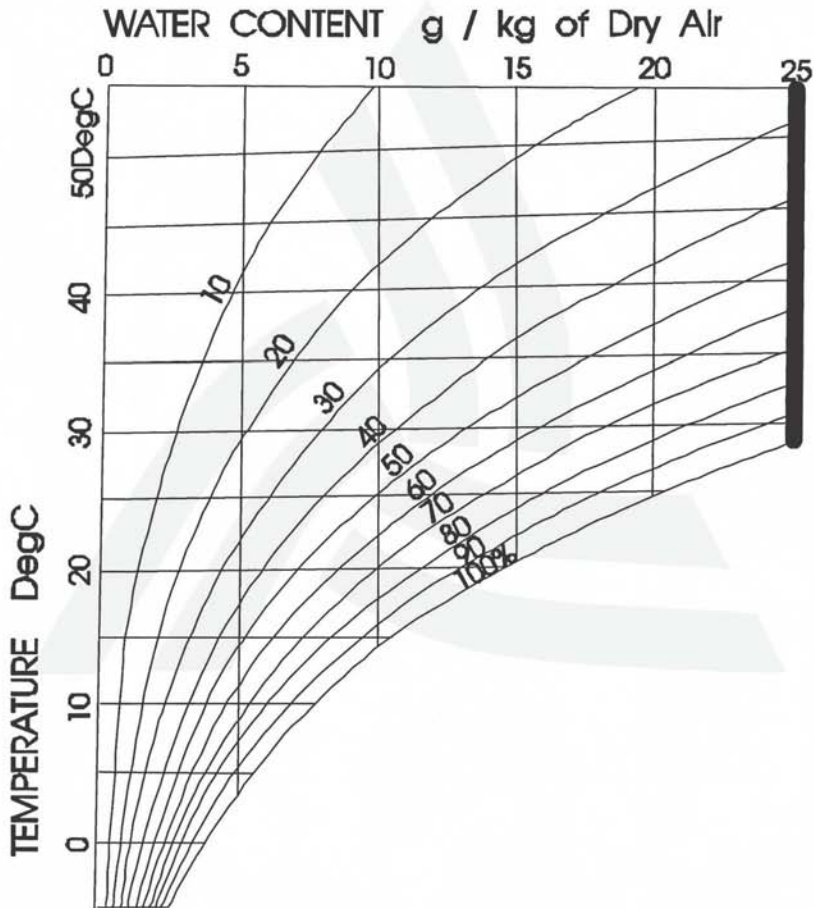
		Pressure loss in bars (indicative) pr 10 m hose length			
Hose iD	Pressure bar	Nozzle size			
		.019"	.023"	.027"	.035"
1/4"					
Paint A	100	2	3	4,5	7,5
	150	2,5	4	5,5	9
	200	3	4,5	6,5	11
Paint B	100	20	30	45	75
	150	25	35	50	90
	200	30	45	60	110
Paint C	100	45	65	95	na
	150	55	80	120	na
	200	65	95	140	na
3/8"					
Paint A	100	0,5	0,6	0,9	1,5
	150	0,5	0,7	1,1	1,8
	200	0,6	0,9	1,2	2,1
Paint B	100	4	6	8,5	15
	150	5	7,5	11	18
	200	6	10	12	22
Paint C	100	10	15	20	35
	150	10	15	25	40
	200	15	20	30	50
1/2"					
Paint A	100	0,2	0,2	0,3	0,5
	150	0,2	0,25	0,35	0,6
	200	0,2	0,3	0,4	0,7
Paint B	100	1,5	2	3	5
	150	1,5	2,5	3,5	6
	200	2	3	4	7
Paint C	100	3	4,5	6	11
	150	3,5	5	7,5	13
	200	4	6	8,5	15

The MOLLIER-(ix) DIAGRAMME

The MOLLIER or ix-Diagramme is a very useful diagramme for determining humidity conditions.

It can be used for dew-point calculations. It can also be used for calculating how much water is in the air - and how much need to be removed to achieve a required relative humidity.

These latter properties can be very helpful, when doing tank-coating work.



For the correct use of the diagramme
please study relevant literature

DEW POINT TABLE

Below is given dew points in °C for a number of situations, as determined by your Slingpsychrometer.

If you cannot find exactly your readings on the slingpsychrometer, find the one one step higher in both %RH and temperature and the one correspondingly one step lower and interpolate straight forward between them.

RELATIVE HUMIDITY %RH	DRY BULB TEMPERATURE °C										
	0	2,5	5	7,5	10	12,5	15	17,5	20	22,5	25
20	-20	-18	-16	-14	-12	-9,8	-7,7	-5,6	-3,6	-1,5	0,5
25	-18	-15	-13	-11	-9,1	-6,9	-4,8	-2,7	-0,6	1,5	3,6
30	-15	-13	-11	-8,9	-6,7	-4,5	-2,4	-0,2	1,9	4,1	6,2
35	-14	-11	-9,1	-6,9	-4,7	-2,5	-0,3	1,9	4,1	6,3	8,5
40	-12	-9,7	-7,4	-5,2	-2,9	-0,7	1,5	3,8	6,0	8,2	10,5
45	-10	-8,2	-5,9	-3,6	-1,3	0,9	3,2	5,5	7,7	10,0	12,3
50	-9,1	-6,8	-4,5	-2,2	0,1	2,4	4,7	7,0	9,3	11,6	13,9
55	-7,9	-5,6	-3,3	-0,9	1,4	3,7	6,1	8,4	10,7	13,0	15,3
60	-6,8	-4,4	-2,1	0,3	2,6	5,0	7,3	9,7	12,0	14,4	16,7
65	-5,8	-3,4	-1,0	1,4	3,7	6,1	8,5	10,9	13,2	15,6	18,0
70	-4,8	-2,4	0,0	2,4	4,8	7,2	9,6	12,0	14,4	16,8	19,1
75	-3,9	-1,5	1,0	3,4	5,8	8,2	10,6	13,0	15,4	17,8	20,3
80	-3,0	-0,6	1,9	4,3	6,7	9,2	11,6	14,0	16,4	18,9	21,3
85	-2,2	0,2	2,7	5,1	7,6	10,1	12,5	15,0	17,4	19,9	22,3
90	-1,4	1,0	3,5	6,0	8,4	10,9	13,4	15,8	18,3	20,8	23,2
95	-0,7	1,8	4,3	6,8	9,2	11,7	14,2	16,7	19,2	21,7	24,1
100	0,0	2,5	5,0	7,5	10,0	12,5	15,0	17,5	20,0	22,5	25,0

RELATIVE HUMIDITY %RH	DRY BULB TEMPERATURE °C										
	25	27,5	30	32,5	35	37,5	40	42,5	45	47,5	50
20	0,5	2,6	4,7	6,7	8,8	10,8	12,9	14,9	17,0	19,0	21,0
25	3,7	5,8	7,9	10,0	12,1	14,2	16,3	18,4	20,5	22,6	24,7
30	6,3	8,5	10,6	12,8	14,9	17,1	19,2	21,4	23,5	25,7	27,8
35	8,5	10,7	13,0	15,1	17,3	19,5	21,7	23,9	26,1	28,3	30,5
40	10,5	12,8	15,0	17,2	19,5	21,7	23,9	26,2	28,4	30,6	32,8
45	12,3	14,6	16,8	19,1	21,4	23,6	25,9	28,2	30,4	32,7	34,9
50	13,9	16,2	18,5	20,8	23,1	25,4	27,7	30,0	32,3	34,5	36,8
55	15,4	17,7	20,0	22,4	24,7	27,0	29,3	31,6	33,9	36,3	38,6
60	16,7	19,1	21,4	23,8	26,1	28,5	30,8	33,2	35,5	37,8	40,2
65	18,0	20,4	22,8	25,1	27,5	29,9	32,2	34,6	36,9	39,3	41,7
70	19,2	21,6	24,0	26,4	28,8	31,1	33,5	35,9	38,3	40,7	43,1
75	20,3	22,7	25,1	27,5	29,9	32,4	34,8	37,2	39,6	42,0	44,4
80	21,3	23,8	26,2	28,6	31,1	33,5	35,9	38,3	40,8	43,2	45,6
85	22,3	24,8	27,2	29,7	32,1	34,6	37,0	39,5	41,9	44,4	46,8
90	23,3	25,7	28,2	30,7	33,1	35,6	38,1	40,5	43,0	45,5	47,9
95	24,1	26,6	29,1	31,6	34,1	36,6	39,1	41,5	44,0	46,5	49,0
100	25,0	27,5	30,0	32,5	35,0	37,5	40,0	42,5	45,0	47,5	50,0

°C	0	5	10	15	20	25	30	35	40	45	50
°F	32	41	50	59	68	77	86	95	104	113	122

CONVERSION TABLES

To convert

Multiply by



Distance:	micron	mil	0,04	25
	centimeters (cm)	inches	0,3937	2,54
	meter	feet	3,2808	0,304
	meter	yards	1,09361	0,9144
	km	nautic mile	0,5396	1,853
	km	mile	0,621	1,609
Area:	sq.meter(m ²)	sq.ft	10,764	0,0929
Volume:	liter	US gallon	0,264	3,785
	liter	Imp.gallon	0,22	4,55
	m ³	ft ³	35,315	0,0283
Area/Volume:	m ² /liter	sq.ft/US gallon	40,74	0,024
	m ² /liter	sq.ft/Imp.gallon	48,93	0,020
Weight:	kg	lbs	2,205	0,4536
Density	g/cm ³	lb/in ³	0,036	27,68
	kg/liter	lbs/US gallon	8,344	0,11985
Pressure:	atm.	bar	1,013	0,987
	atm.	kgf/cm ²	1,033	0,968
	atm.	p.s.i.	14,7	0,068
	bar	kgf/cm ²	1,02	0,98
	bar	p.s.i.	14,5	0,069
	kgf/cm ²	p.s.i.	14,22	0,07
	kgf/cm ²	MPa	0,098	10,2041
	N/mm ²	MPa	1	1
Speed	m/s	ft/s	3,281	0,305
	km/h	mile/h	0,621	1,609
	km/h	knots	0,54	1,852
Power	N	lbf	0,225	4,448
Effect	kW	Horsepower	1,341	0,746
	kW	kcal/h	859,9	0,0012
Energy	kWh	Btu	3412	0,0003
	kWh	Kcal	859,9	0,0012
	kcal	Btu	3,968	0,252
V.O.C.:	g/liter	lbs/US gallon	0.00834	119,904

WET FILM THICKNESS

Wet film thicknesses given below correspond exactly to dry film thicknesses. In practice, always use the tooth on your wft-gauge which is the first above the indicated wft.

THINNING: Thinning affect the volume solids of the paint. Calculate the volume solids after the thinning before you use the tables below.

Calculate as follows: $\text{DATASHEET VS\%} * \frac{100}{(100 + \%\text{THINNING})}$

HIGH BUILD & HIGH SOLIDS PAINTS

MICRON	VOLUME SOLIDS %										
DRY	50	55	60	65	70	75	80	85	90	95	100
40	80										
45	90										
50	100	91									
55	110	100									
60	120	109	100								
65	130	118	108								
70	140	127	117	108	100						
80	160	145	133	123	114	107	100				
90	180	164	150	138	129	120	113	106	100		
100	200	182	167	154	143	133	125	118	111	105	100
125	250	227	208	192	179	167	156	147	139	132	125
150	300	273	250	231	214	200	188	176	167	158	150
175		318	292	269	250	233	219	206	194	184	175
200			333	308	286	267	250	235	222	211	200
225				346	321	300	281	265	250	237	225
250				385	357	333	313	294	278	263	250
275					393	367	344	324	306	289	275
300					429	400	375	353	333	316	300
350						467	438	412	389	368	350
400							500	471	444	421	400
450								529	500	474	450
500									556	526	500

ENAMELS AND SHOPPRIMERS

MICRON	VOLUME SOLIDS %									
DRY	15	20	25	30	35	40	45	50	55	60
15	100	75	60	50	43					
20	133	100	80	67	57					
25	167	125	100	83	71	63	56			
30	200	150	120	100	86	75	67	60	55	
35		175	140	117	100	88	78	70	64	58
40		200	160	133	114	100	89	80	73	67
45			180	150	129	113	100	90	82	75
50			200	167	143	125	111	100	91	83

INTERCHANGE TABLE FOR AIRLESS SPRAY NOZZLES (Indicative)

FAN ANGLE	EQUIV. ORIFICE	GRACO	DeVILBISS	BINKS	SPRAYING SYSTEMS	ATLAS COPCO	SPEE- FLO	DELAVAN	NORDSON	WAGNER
50°	.017"	517	JAC-44	9-1850	500050TC	6850-0050	702-185	c1850	0014/08	518
	.018"									
	.019"	519		9-2150	500067TC	6850-0067	702-215	c2150	0020/08	521
	.021"	521	JAC-41						0030/08	
	.023"	523		9-2650	5001TC	6850-0001	702-265	c2650		526
	.026"	526							0045/08	
	.029"	529		9-3150		6850-0015	702-315	c3150		531
40°	.015"	415	JAC-29	9-1540	400033TC	6840-0033	702-154	c1540		415
	.017"	417							0014/06	
	.018"			9-1840	400050TC	6840-0050	702-184	c1840		418
	.019"	419								
	.021"	421	JAC-43	9-2140	400067TC	6840-0067	702-214	c2140	0020/06	421
	.026"	426		9-2640	4001TC	6840-0001	702-264	c2640		426
	.029"	429						c2940	0045/06	
20°- 25°	.031"	431		9-3140	40015TC	6840-0015	702-314	c3140		431
	.015"	215		9-1530	250033TC	6825-0033		1525		215
	.017"	217							0014/02	
	.018"			9-1830	250050TC			c1825		218
	.019"	219								
	.021"	221		9-2130	250067TC	6825-0067		c2125		221

(Continued)

INTERCHANGE TABLE FOR AIRLESS SPRAY NOZZLES (Indicative)

FAN ANGLE	EQUIV. ORIFICE	GRACO	DeVILBISS	BINKS	SPRAYING SYSTEMS	ATLAS COPCO	SPEE- FLO	DELAVAL	NORDSON	WAGNER
95°	.024"	924	JAC-44	9-2690	9501TC	6895-0001		c2495	0045/20	
	.026"	926						c2695		
	.029"	929						c2995		
	.031"	931						c3195		
	.036"	936						c3695		
80°	.017"	817	JAC-41	9-1880	800050TC	6880-0050	702-188	c1880	0014/16	818
	.018"									
	.019"	819		9-2180	800067TC	6880-0067	702-218	c2180	0020/16	821
	.021"	821								
	.023"	823		9-2680	8001TC	6880-0001	702-268	c2480	0030/16	826
	.026"	826								
	.029"	829		9-3180	80015TC	6880-0015	702-318	c2980	0045/16	831
	.031"	831								
60°- 65°	.017"	617	JAC-31	9-1860	650050TC	6865-0050		c1865	0014/12	618
	.018"									
	.019"	619		9-2160	650067TC	6865-0067		c2165	0020/12	621
	.021"	621								
	.023"	623		9-2660	6501TC	6865-001		c2665	0030/12	626
	.026"	626								
	.029"	629		9-3160	65015TC	6865-0015		c2965	0045/12	631
	.031"	631								
	.036"	636								

(Continues)