

Steady state heat transfer calculation plane wall - vertical

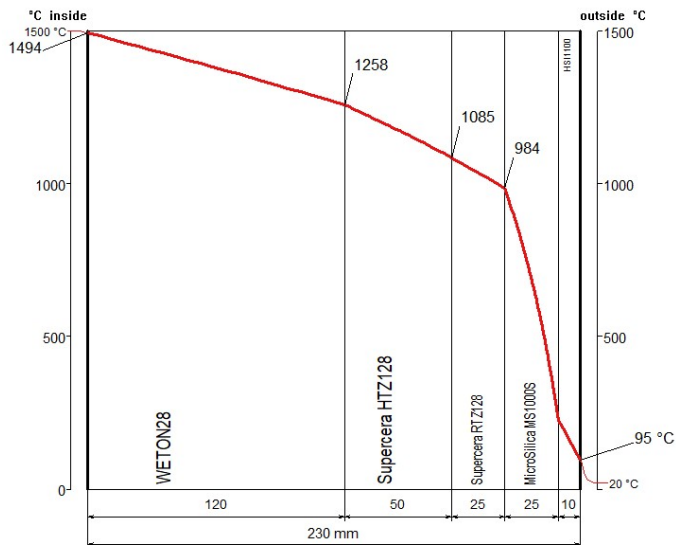
Offer/Order No.	Llloyd001TC	Name	
Customer	Lloyd Insulations India LTD	Date	23/07/2021
Project		Revis.Name	
Location	Delhi	Revis.Date	

Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	971.3 W/m2 Heat loss
Surface temperature	1493.5	94.9	°C	195.1 MJ/m2 heat storage
Heat transition coefficient	150	12.96 ⁽¹⁾	W/m2K	135.1 kg/m2 weight
				230 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn.	Density	Classif.	temperature		
					border	mean	K mean
Material		mm	kg/m3	°C	°C	°C	W/mK
1 WETON28		120	900	1540	1493.5	1378	0.4945
2 Supercera HTZ128		50	128	1400	1257.5	1174	0.2822
3 Supercera RTZ128		25	128	1200	1084.9	1035	0.2406
4 MicroSilica MS1000S		25	300	1000	983.9	656	0.0332
5 HSI1100		10	1000	1000	224.5	162	0.0748
					94.9		



Steady state heat transfer calculation plane wall - vertical

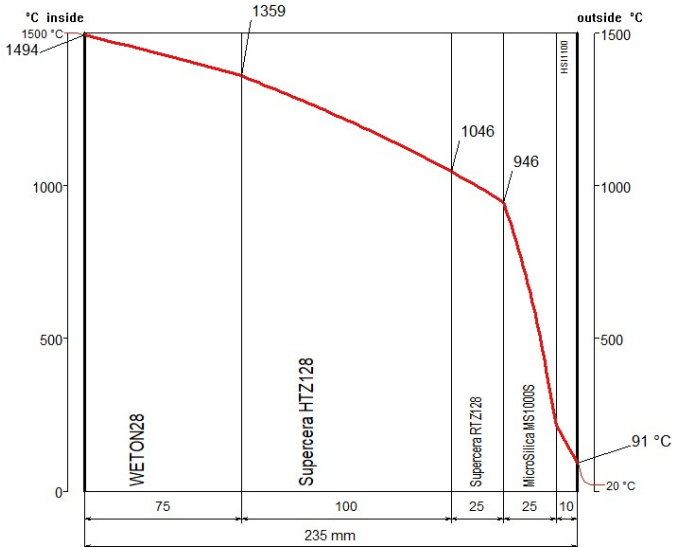
Offer/Order No.	Llloyd001TC	Name	
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	911.3 W/m2 Heat loss
Surface temperature	1493.9	91.4	°C	142.6 MJ/m2 heat storage
Heat transition coefficient	150	12.76 ⁽¹⁾	W/m2K	101 kg/m2 weight
				235 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside			temperature			
			Thickn.	Density	Classif.	K mean
Material	mm	kg/m3	°C	border °C	mean °C	W/mK
1 WETON28	75	900	1540	1493.9	1427	0.5068
2 Supercera HTZ128	100	128	1400	1359	1211	0.2932
3 Supercera RTZ128	25	128	1200	1045.5	997	0.229
4 MicroSilica MS1000S	25	300	1000	945.9	628	0.0321
5 HSI1100	10	1000	1000	214.5	155	0.0739
				91.4		



Steady state heat transfer calculation plane wall - vertical

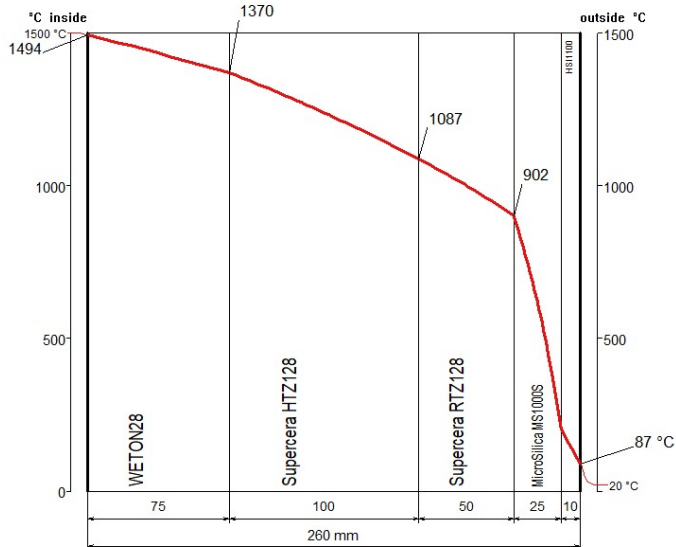
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	844.4 W/m ² Heat loss
Surface temperature	1494.4	87.4	°C	146.7 MJ/m ² heat storage
Heat transition coefficient	150	12.53 ⁽¹⁾	W/m ² K	104.2 kg/m ² weight
				260 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside			temperature			
			Thickn.	Density	Classif.	K mean
Material	mm	kg/m ³	°C	border °C	mean °C	W/mK
1 WETON28	75	900	1540	1494.4	1433	0.5082
2 Supercera HTZ128	100	128	1400	1369.7	1235	0.3005
3 Supercera RTZ128	50	128	1200	1086.8	998	0.2294
4 MicroSilica MS1000S	25	300	1000	901.9	596	0.0308
5 HSI1100	10	1000	1000	203	147	0.073
				87.4		



Steady state heat transfer calculation plane wall - vertical

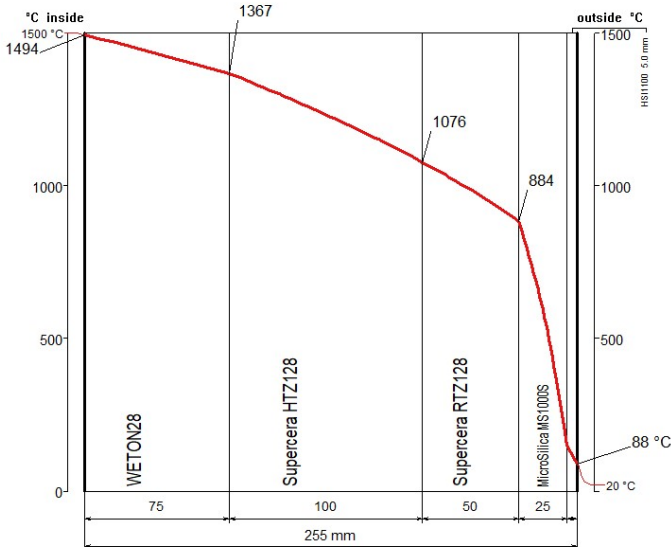
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	862 W/m2 Heat loss
Surface temperature	1494.3	88.5	°C	145.4 MJ/m2 heat storage
Heat transition coefficient	150	12.59 ⁽¹⁾	W/m2K	99.2 kg/m2 weight
				255 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn. mm	Density kg/m3	Classif. °C	temperature		K mean W/mK
					border °C	mean °C	
1	WETON28	75	900	1540	1494.3	1431	0.5078
2	Supercera HTZ128	100	128	1400	1366.9	1229	0.2986
3	Supercera RTZ128	50	128	1200	1076.1	984	0.2252
4	MicroSilica MS1000S	25	300	1000	883.7	561	0.0295
5	HSI1100	5.0	1000	1000	150.1	120	0.07
					88.5		



Steady state heat transfer calculation plane wall - vertical

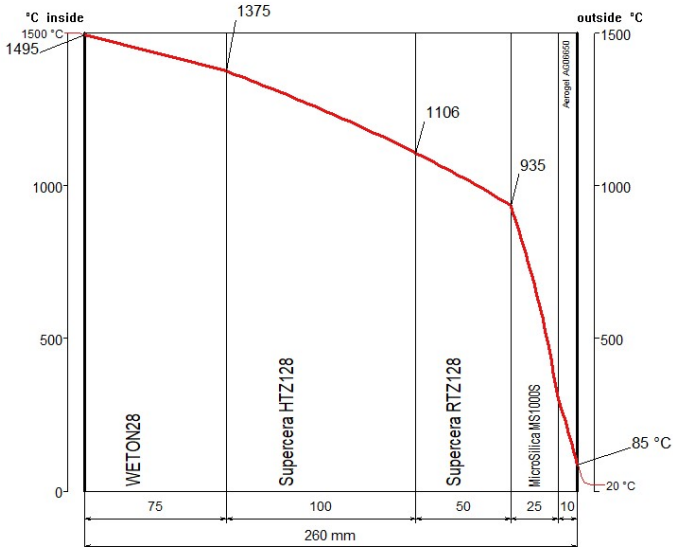
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	811.4 W/m2 Heat loss
Surface temperature	1494.6	85.4	°C	147.1 MJ/m2 heat storage
Heat transition coefficient	150	12.41 ⁽¹⁾	W/m2K	96.4 kg/m2 weight
				260 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn.	Density	Classif.	temperature		K mean
					border	mean	
Material		mm	kg/m3	°C	°C	°C	W/mK
1 WETON28		75	900	1540	1494.6	1435	0.5088
2 Supercera HTZ128		100	128	1400	1375	1247	0.304
3 Supercera RTZ128		50	128	1200	1106.5	1024	0.2371
4 MicroSilica MS1000S		25	300	1000	934.7	657	0.0333
5 Aerogel AG06650		10	220	500	301.3	201	0.0371
					85.4		



Steady state heat transfer calculation plane wall - vertical

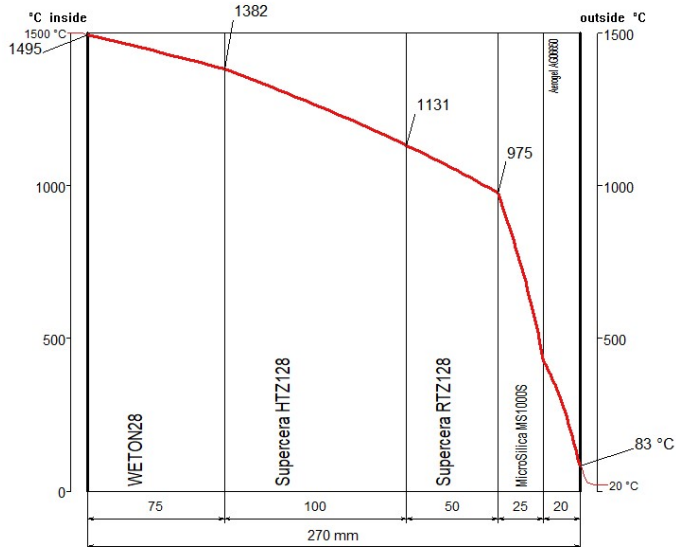
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	768.7 W/m2 Heat loss
Surface temperature	1494.9	82.7	°C	149.2 MJ/m2 heat storage
Heat transition coefficient	150	12.25 ⁽¹⁾	W/m2K	98.6 kg/m2 weight
				270 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn. mm	Density kg/m3	Classif. °C	temperature		K mean W/mK
					border °C	mean °C	
1	WETON28	75	900	1540	1494.9	1439	0.5097
2	Supercera HTZ128	100	128	1400	1381.7	1262	0.3085
3	Supercera RTZ128	50	128	1200	1131.3	1056	0.2467
4	MicroSilica MS1000S	25	300	1000	975.1	729	0.0362
5	Aerogel AG06650	20	220	500	426.5	278	0.0448
					82.7		



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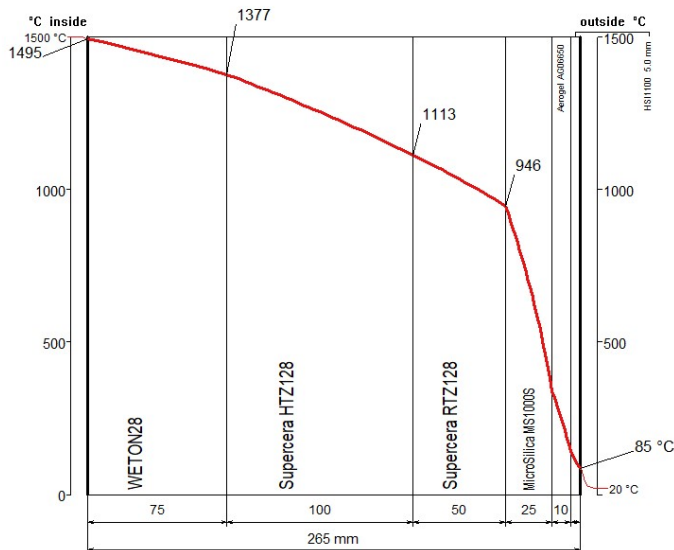
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	799.9 W/m2 Heat loss
Surface temperature	1494.7	84.7	°C	148 MJ/m2 heat storage
Heat transition coefficient	150	12.37 ⁽¹⁾	W/m2K	101.4 kg/m2 weight
				265 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

			temperature			
wall layers from inside to outside			Thickn.	Density	Classif.	K mean
Material	mm	kg/m3	°C	border °C	mean °C	W/mK
1 WETON28	75	900	1540	1494.7	1436	0.5091
2 Supercera HTZ128	100	128	1400	1376.8	1251	0.3052
3 Supercera RTZ128	50	128	1200	1113.2	1032	0.2397
4 MicroSilica MS1000S	25	300	1000	945.8	677	0.0341
5 Aerogel AG06650	10	220	500	335.4	246	0.0416
6 HSI1100	5.0	1000	1000	142.3	114	0.0694
				84.7		



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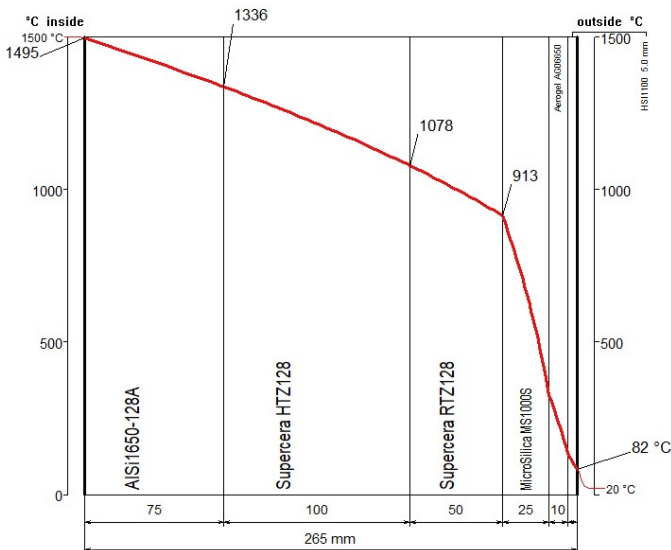
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	753.7 W/m2 Heat loss
Surface temperature	1495.0	81.8	°C	42.83 MJ/m2 heat storage
Heat transition coefficient	150	12.2 ⁽¹⁾	W/m2K	41.1 kg/m2 weight
				265 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside			temperature			
			Thickn.	Density	Classif.	K mean
Material	mm	kg/m3	°C	border °C	mean °C	W/mK
1 AISi1650-128A	75	96	1600	1495	1418	0.3561
2 Supercera HTZ128	100	128	1400	1335.9	1213	0.2938
3 Supercera RTZ128	50	128	1200	1077.9	998	0.2295
4 MicroSilica MS1000S	25	300	1000	913	653	0.0331
5 Aerogel AG06650	10	220	500	322.7	236	0.0406
6 HSI1100	5.0	1000	1000	136.5	109	0.0689
				81.8		



Steady state heat transfer calculation plane wall - vertical

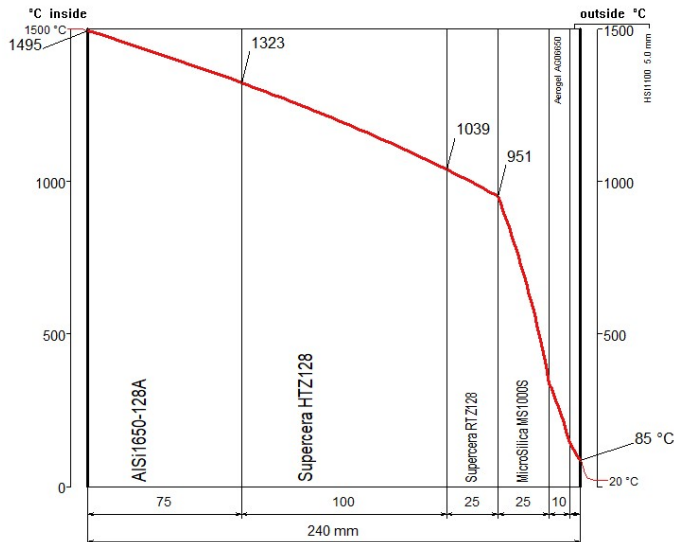
Offer/Order No.	Llloyd001TC	Name	
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	807.3 W/m2 Heat loss
Surface temperature	1494.6	85.1	°C	39.07 MJ/m2 heat storage
Heat transition coefficient	150	12.39 ⁽¹⁾	W/m2K	37.9 kg/m2 weight
				240 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside			temperature			
			Thickn.	Density	Classif.	border mean K mean
Material	mm	kg/m3	°C	°C	°C	W/mK
1 AISi1650-128A	75	96	1600	1494.6	1411	0.354
2 Supercera HTZ128	100	128	1400	1323.2	1188	0.2865
3 Supercera RTZ128	25	128	1200	1039.3	996	0.2288
4 MicroSilica MS1000S	25	300	1000	951	681	0.0342
5 Aerogel AG06650	10	220	500	337.4	248	0.0418
6 HSI1100	5.0	1000	1000	143.2	115	0.0694
				85.1		



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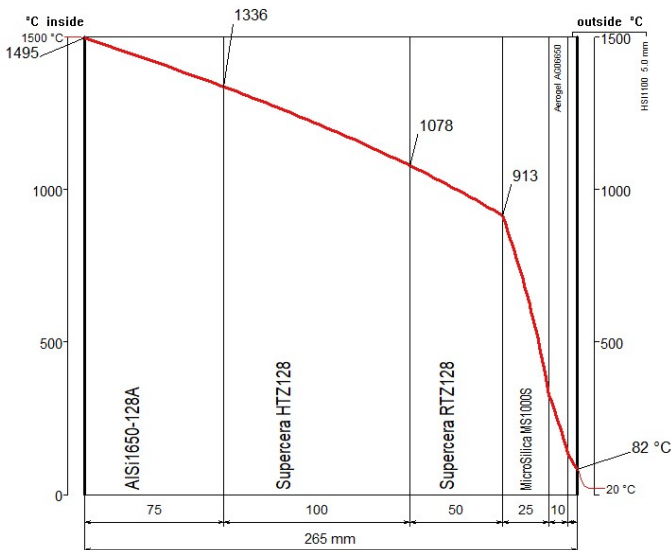
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	753.7 W/m2 Heat loss
Surface temperature	1495.0	81.8	°C	42.83 MJ/m2 heat storage
Heat transition coefficient	150	12.2 ⁽¹⁾	W/m2K	41.1 kg/m2 weight
				265 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside			temperature			
			Thickn.	Density	Classif.	K mean
Material	mm	kg/m3	°C	border °C	mean °C	W/mK
1 AISi1650-128A	75	96	1600	1495	1418	0.3561
2 Supercera HTZ128	100	128	1400	1335.9	1213	0.2938
3 Supercera RTZ128	50	128	1200	1077.9	998	0.2295
4 MicroSilica MS1000S	25	300	1000	913	653	0.0331
5 Aerogel AG06650	10	220	500	322.7	236	0.0406
6 HSI1100	5.0	1000	1000	136.5	109	0.0689
				81.8		



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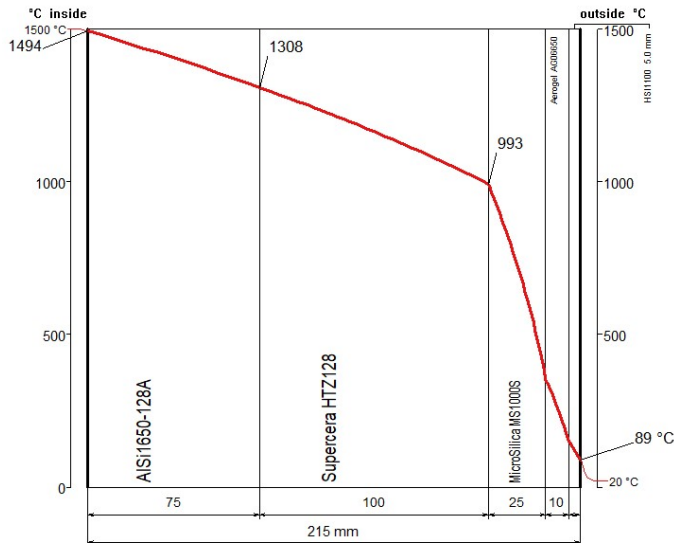
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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	868.7 W/m2 Heat loss
Surface temperature	1494.2	88.9	°C	35.28 MJ/m2 heat storage
Heat transition coefficient	150	12.61 ⁽¹⁾	W/m2K	34.7 kg/m2 weight
				215 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn.	Density	Classif.	temperature		
					border	mean	K mean
Material		mm	kg/m3	°C	°C	°C	W/mK
1 AISi1650-128A		75	96	1600	1494.2	1404	0.3514
2 Supercera HTZ128		100	128	1400	1308.3	1159	0.2778
3 MicroSilica MS1000S		25	300	1000	992.5	712	0.0355
4 Aerogel AG06650		10	220	500	353.5	261	0.0431
5 HSI1100		5.0	1000	1000	150.9	120	0.07
					88.9		



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Calculation

	inside	outside	unit	lining characteristics
Ambient temperature	1500	20	°C	940.8 W/m2 Heat loss
Surface temperature	1493.7	93.2	°C	32.71 MJ/m2 heat storage
Heat transition coefficient	150	12.86 ⁽¹⁾	W/m2K	32.3 kg/m2 weight
				190 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.90 - wind =0 m/s

wall layers from inside to outside		Thickn.	Density	Classif.	temperature		
					border	mean	K mean
Material		mm	kg/m3	°C	°C	°C	W/mK
1 AISi1650-128A		50	96	1600	1493.7	1430	0.3604
2 Supercera HTZ128		100	128	1400	1363	1210	0.293
3 MicroSilica MS1000S		25	300	1000	1039	747	0.0369
4 Aerogel AG06650		10	220	500	371.4	275	0.0445
5 HSI1100		5.0	1000	1000	159.6	127	0.0707
					93.2		

