ENERGIELABELS VOOR INDUSTRIËLE ISOLATIESYSTEMEN

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TIPCHECK Expert Level II


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ECONOMISCHE ISOLATIEDIKTE
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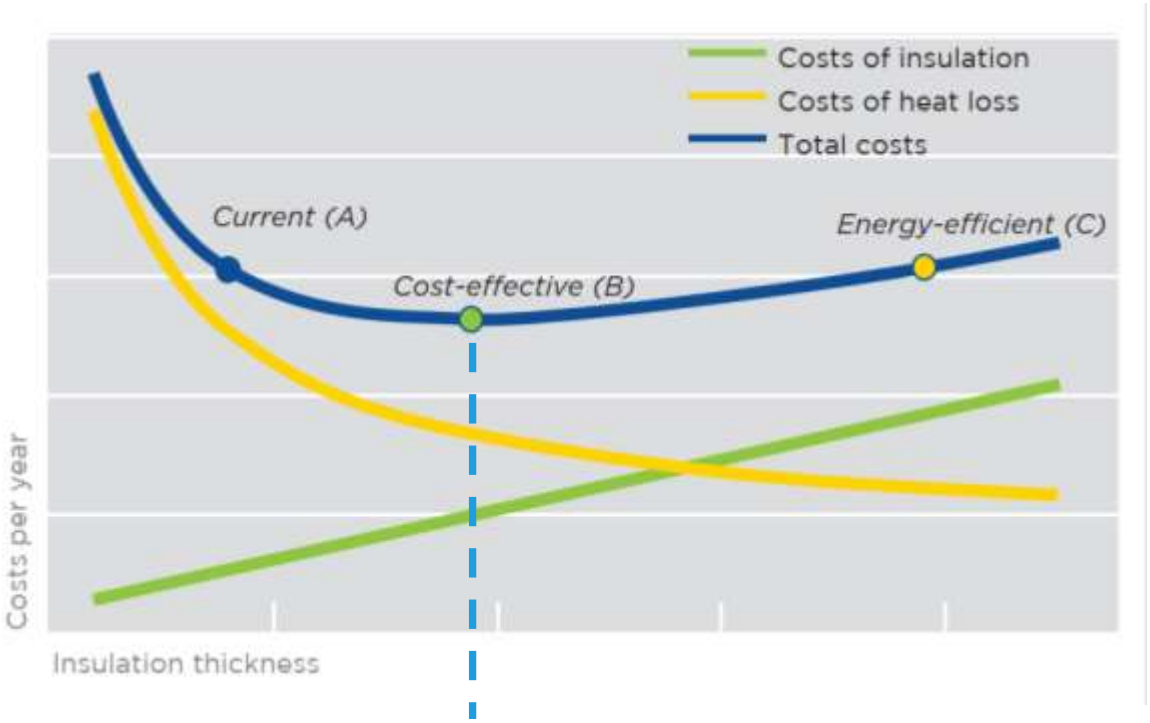
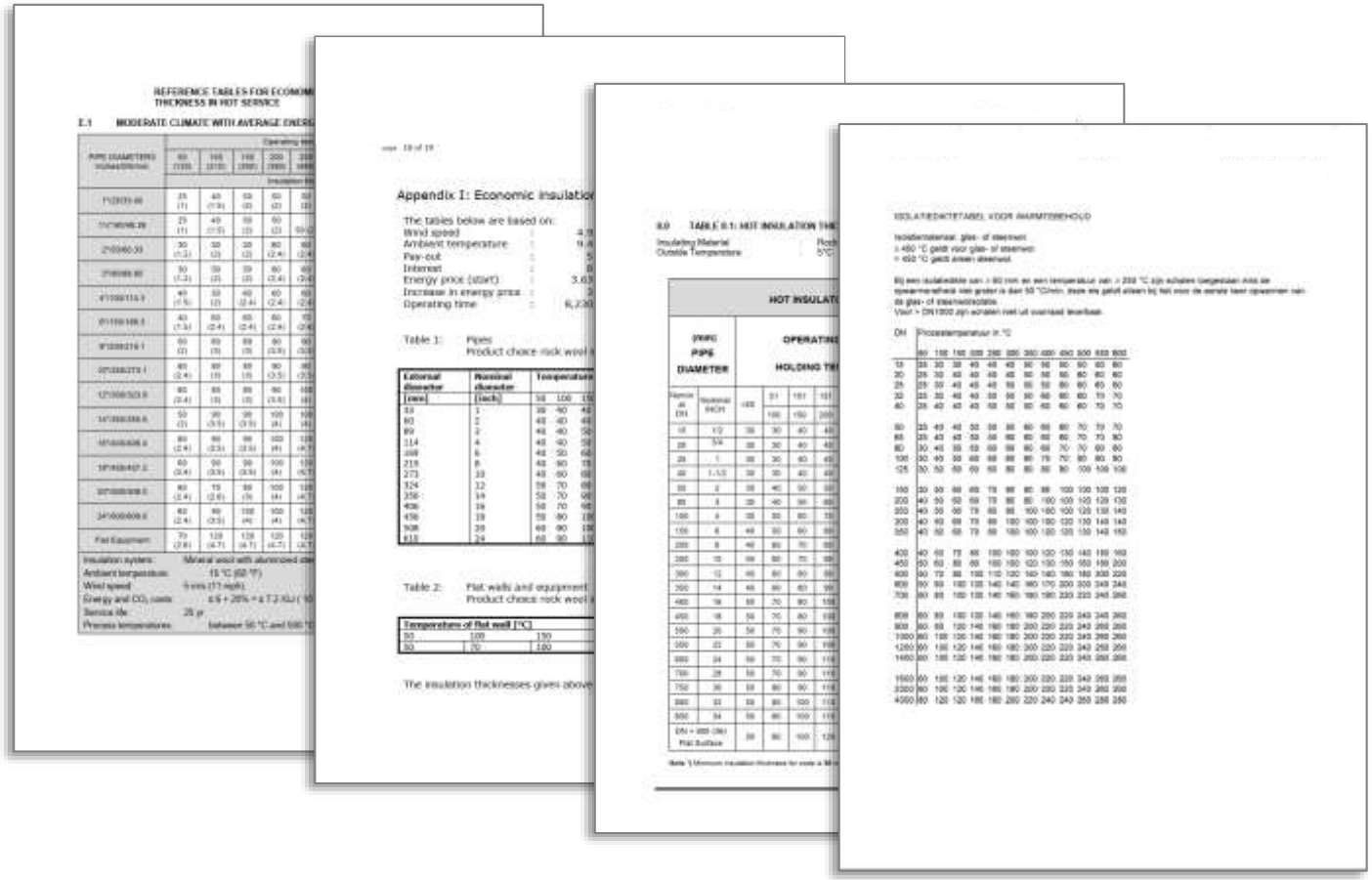
ECONOMISCHE ISOLATIEDIKTE



economische isolatiedikte

ECONOMISCHE ISOLATIEDIKTE



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VDI 4610 – 1 | VDI: VEREIN DEUTSCHER INGENIEURE

VDI-RICHTLINIEN

VEREIN DEUTSCHER INGENIEURE

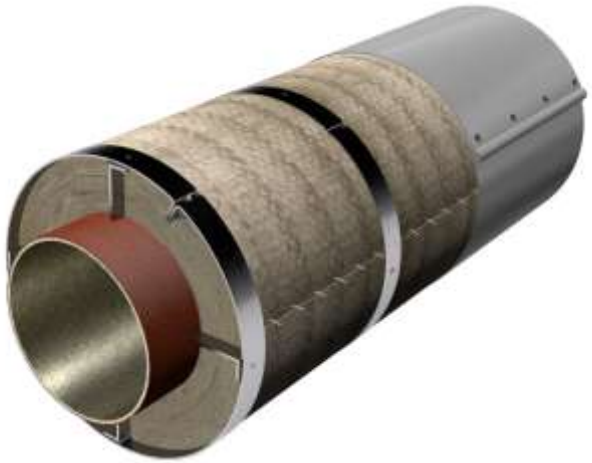
Energieeffizienz betriebstechnischer Anlagen
Wärme- und Kälteschutz
Energy efficiency of industrial installations
Thermal insulation

VDI 4610
Blatt 1 / Part 1

Inhalt / Contents

VDI-Gesellschaft Energie und Umwelt (GEU)

VDI-Handbuch Energietechnik
VDI-Handbuch Ressourcenmanagement in der Umwelttechnik
VDI-Handbuch Wärme-/Heiztechnik



- Ecologische isolatiedikte
- Gebaseerd op CO_2 emissies

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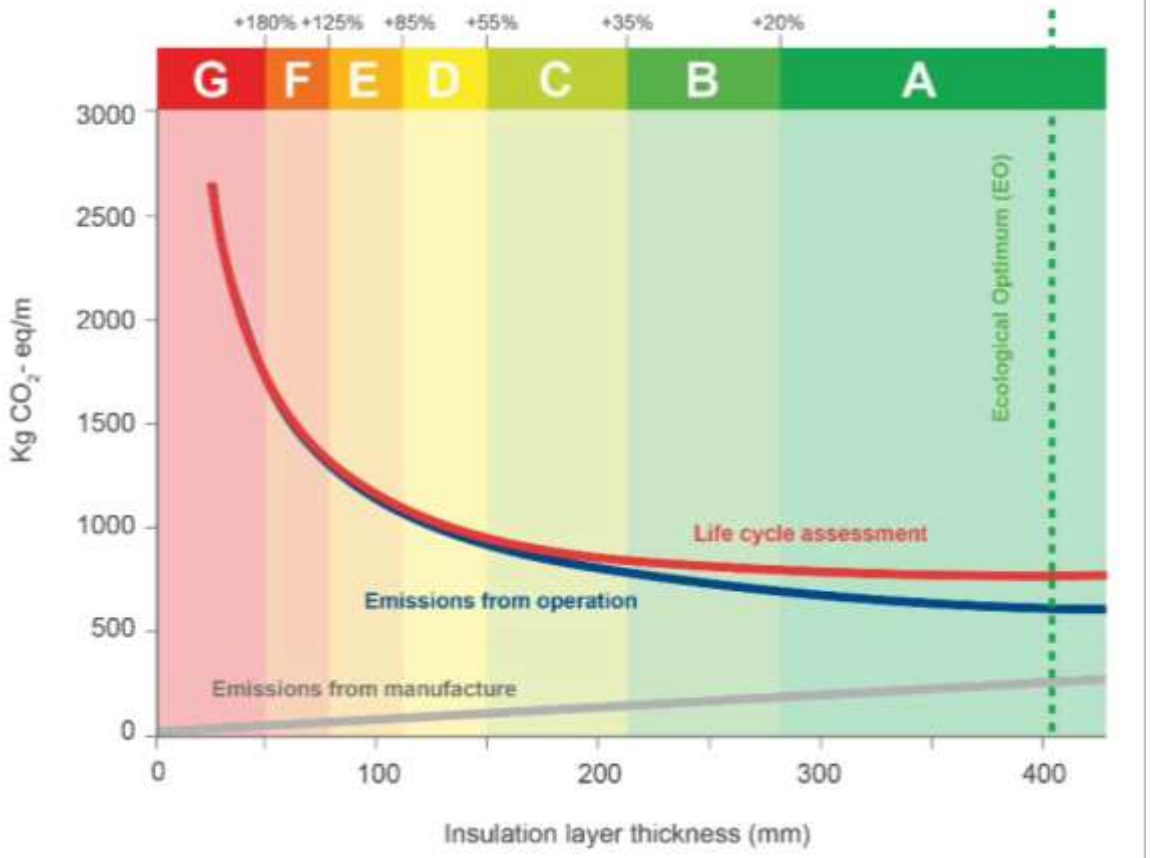
ECOLOGISCH OPTIMUM (EO)



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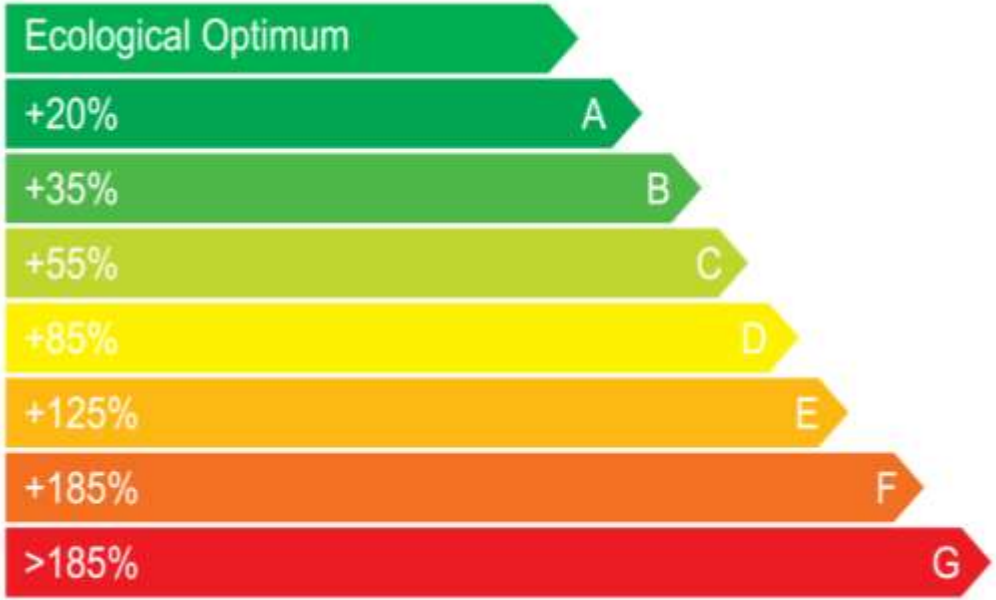
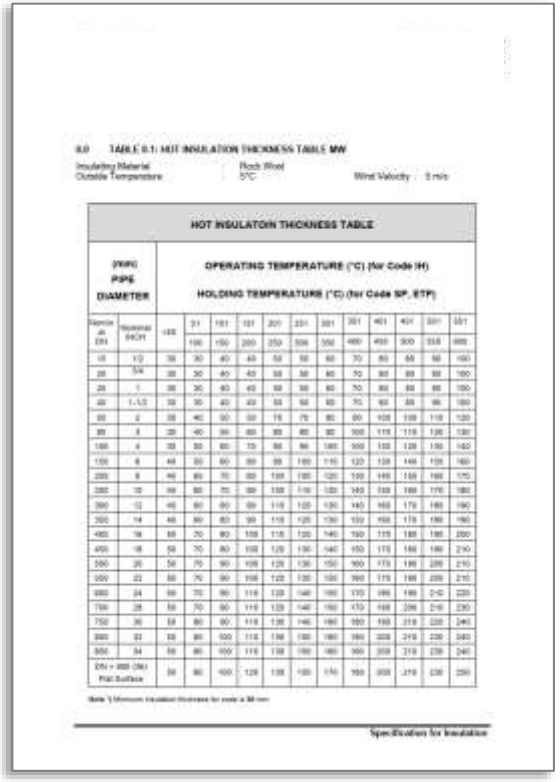
ENERGY EFFICIENCY CLASSES – VDI 4610-1





6.0 TABLE 6.1: HOT INSULATION THICKNESS TABLE MW

Insulating Material: Rock Wool
Outside Temperature: 5°C
Wind Velocity: 5 m/s

HOT INSULATION THICKNESS TABLE

(NPS) PIPE DIAMETER		OPERATING TEMPERATURE (°C) (for Code IH) / HOLDING TEMPERATURE (°C) (for Code SP, ETP)												
Nominal Bore DN	Nominal INCH	≤40	41 – 100	101 – 150	151 – 200	201 – 250	251 – 300	301 – 350	351 – 400	401 – 450	451 – 500	501 – 550	551 – 600	
15	1/2	30	30	40	40	50	50	60	70	80	80	90	100	
20	3/4	30	30	40	40	50	50	60	70	80	80	90	100	
25	1	30	30	40	40	50	50	60	70	80	80	90	100	
40	1 1/2	30	30	40	40	50	50	60	70	80	80	90	100	
50	2	30	40	50	50	70	70	80	80	100	100	110	120	
80	3	30	40	50	60	80	80	90	100	110	110	120	130	
100	4	30	50	60	70	90	90	100	100	120	120	130	140	
150	6	40	50	60	80	90	100	110	120	130	140	150	160	
200	8	40	60	70	80	100	100	120	130	140	150	160	170	
250	10	50	60	70	90	100	110	120	140	150	160	170	180	
300	12	40	60	80	90	110	120	130	140	150	170	180	190	
350	14	40	60	80	90	110	120	130	150	160	170	180	190	
400	16	50	70	80	100	110	120	140	150	170	180	190	200	
450	18	50	70	80	100	120	130	140	150	170	180	190	210	
500	20	50	70	90	100	120	130	150	160	170	190	200	210	
600	24	50	70	90	100	120	130	150	160	170	190	200	210	
750	30	50	80	90	110	120	140	150	160	170	190	210	220	
900	36	50	80	90	110	130	140	150	160	170	190	210	220	
1050	42	50	80	100	110	130	150	160	180	190	200	210	230	
1200	48	50	80	100	110	130	150	160	180	190	200	210	230	
DN > 1200 (48) Flat Surface		50	80	100	120	130	150	170	180	200	210	230	250	

Note 1) Minimum insulation thickness for code A 50 mm

Specification for Insulation

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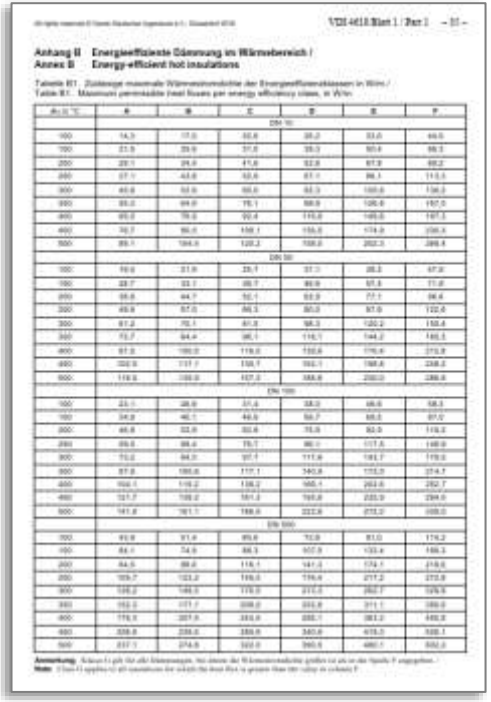
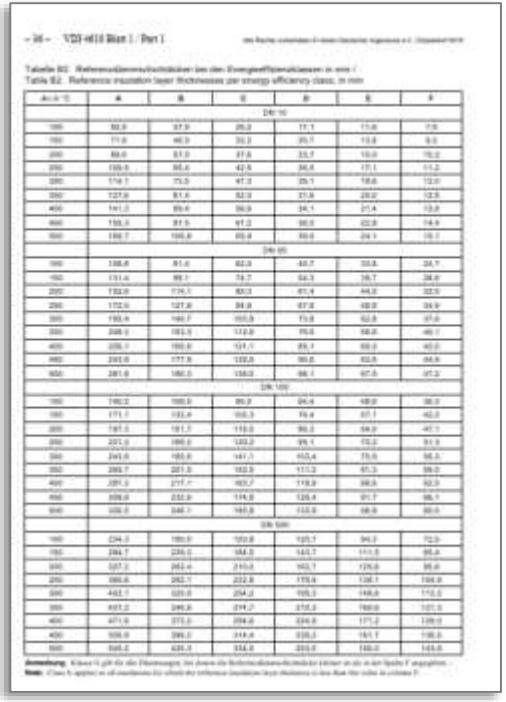
ENERGY EFFICIENCY CLASSES – VDI 4610-1 - ONTWERPRICHTLIJNEN

Warme isolatie – Bijlage B1 & B2
Koude isolatie – Bijlage C1 & C2 + D1 & D2

- Warmteverlies per label



- Isolatiedikte per label



Gebaseerd op generieke waarden & uitgangspunten

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PRAKTIJK

LEIDINGWERK

- Bestaand isolatiesysteem vs nieuw isolatiesysteem

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LEIDINGWERK – CHECK BESTAANDE SITUATIE

Design data:

- Room temperature -10 up to +30 °C
- Wind speed 4 m/s
- Max. allowable jacket surface temperature 55 °C

The following table shows the required insulation layer thickness in mm:

Nominal diameter DN	Operating Temperature °C									
	50	100	150	200	250	300	350	400	450	500
15	40	40	50	60	60	70	80	80	80	
20	40	40	50	60	60	70	80	80	100	
25	40	40	50	60	60	70	90	90	100	
32	40	50	50	70	70	70	100	100	120	
40	40	50	50	70	70	70	100	100	120	
50	40	50	60	70	70	80	100	100	120	
65	40	50	60	70	70	80	100	100	150	
80	40	50	60	80	80	90	110	130	150	
100	40	50	60	80	80	100	110	130	160	
125	40	50	70	80	90	110	120	150	160	
150	40	50	70	80	100	110	130	150	160	
200	40	60	80	90	100	120	130	150	180	
250	50	60	80	100	100	120	140	170	190	
300	60	60	80	100	100	140	170	180	200	
350	60	60	80	100	100	140	170	190	200	
400	60	60	80	100	100	150	180	190	210	
500	60	80	90	100	110	160	190	210	220	
600	60	80	90	100	120	170	200	210	220	
700	60	80	90	130	140	200	200	210	220	
800	60	80	90	150	170	200	200	210	280	

VDI 4610 ENERGY CLASSES
INSULATION THICKNESS CHECK

DN	Da	50	100	150	200	250	300
25	33,7	40	40	50	60	60	70
40	48,3	40	50	50	70	70	70
50	60,3	40	40	60	70	70	80
80	88,9	40	50	60	80	80	90
100	114,3	40	50	60	80	80	100
150	168,3	40	50	70	80	90	110
200	219,1	40	60	80	90	100	120
250	273	50	60	80	100	100	120
300	323,9	60	60	80	100	100	140
350	355,6	60	60	80	100	100	140
400	406,4	60	60	80	100	100	150
500	508	60	80	90	100	110	160
600	609,6	60	80	90	100	120	170
700	711,2	60	80	90	130	140	200
750	762	60	80	90	130	140	200
800	812,8	60	80	90	130	170	200
900	914,4	80	100	110	150	190	220
1000	1016	80	100	110	150	190	220
1100	1116	100	120	130	170	200	240
1200	1219	100	120	130	170	200	240

Class EO
Class A
Class B
Class C
Class D
Class E
Class F

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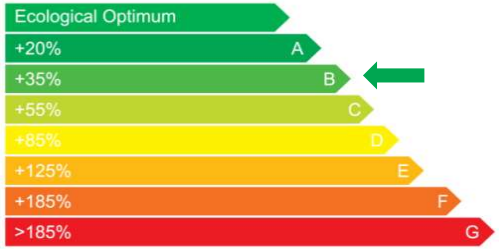
LEIDINGWERK – VOORSTEL NIEUWE SITUATIE

Class B		U TECH Pipe Section MT 4.0 and U TECH Wired Mat MT 6.0 X				
		Required Insulation Thickness [mm] for Efficiency Class B at operating temperature [°C]				
DN	Diameter outside	50	100	150	200	250
25	33,7	20	30	40	50	60
40	48,3	30	40	50	60	60
50	60,3	30	50	60	70	90
80	88,9	40	60	70	90	100
100	114,3	50	70	80	100	130
125	139,7	50	70	90	120	140
150	168,3	60	80	100	120	150
200	219,1	60	90	120	150	170
250	273	70	100	140	160	180
300	323,9	60	120	150	170	190
350	355,6	90	130	160	180	200
400	406,4	90	140	160	190	210
500	508	100	150	180	210	230
600	609,6	110	160	190	220	250
700	711,2	110	160	200	230	260
Wall	--	140	200	250	290	330
		-37%	-34%	-33%	-30%	-27%

Pipe Section

Wired Mats



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VOORUITBLIK

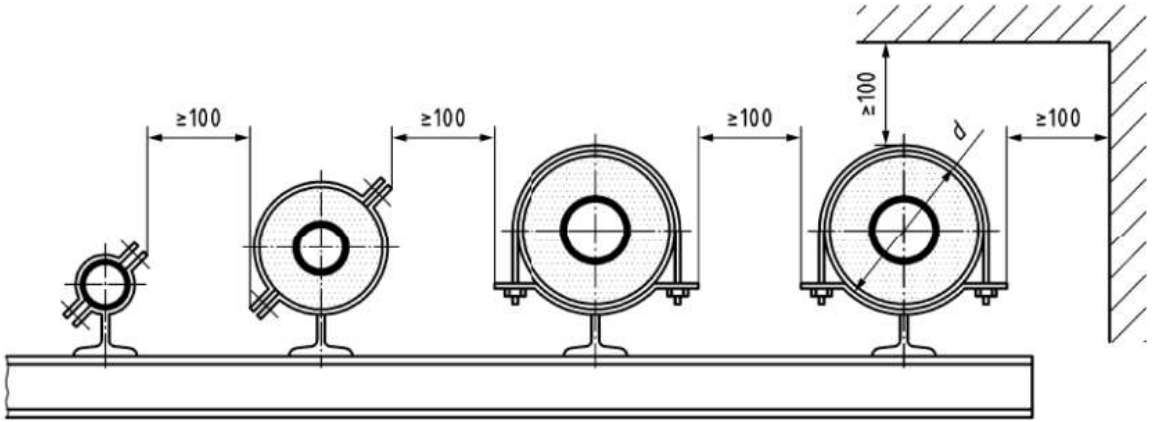
DUITSLAND: DIN 4140 – INDUSTRIËLE INSTALLATIES

Ontwerprichtlijnen

DIN 4140

DIN

Dämmarbeiten an betriebstechnischen Anlagen in der Industrie und in der technischen Gebäudeausrüstung – Ausführung von Wärme- und Kältedämmungen; Text Deutsch und Englisch



DUITSLAND: DIN 4140 – INDUSTRIËLE INSTALLATIES

Update mei 2023: Tabel maximaal warmteverlies → Label C

- Minimale prestatie
- Referentie isolatiesysteem

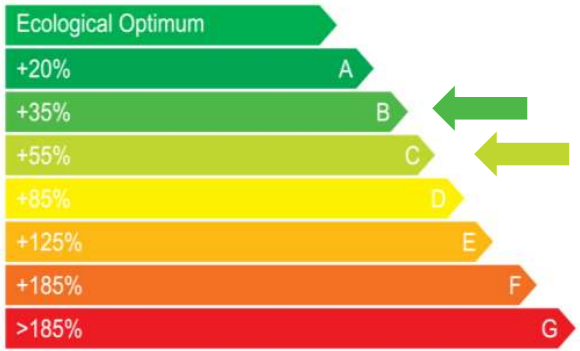


Table D.1 — Maximum heat flux density in heat insulation — Calculation according to VDI 4610 Part 1, Energy efficiency class C

DN	D_a[1]	Maximum heat flux density for the respective medium temperature °C												
		50	100	150	200	250	300	350	400	450	500	550	600	
20	26,9	10,5	21,7	33,6	44,0	56,1	69,0	83,1	98,4	115	134	154	176	
25	33,7	10,0	22,3	33,9	45,8	58,3	71,8	86,4	102	120	139	160	183	
40	48,3	11,7	24,3	36,6	49,3	62,8	77,3	93,1	110	129	149	172	197	
50	60,3	12,4	25,7	38,7	52,1	66,3	81,5	98,1	116	136	157	181	207	
80	88,9	14,0	28,8	43,2	58,1	73,8	90,6	109	129	150	174	200	228	
100	114,3	15,4	31,6	46,9	62,9	79,8	97,9	117	138	161	187	214	245	
125	139,7	16,6	33,8	50,6	67,4	85,3	104	125	147	172	198	228	260	
150	168,3	18,0	36,3	54,0	72,1	91,1	111	133	157	183	211	242	275	
200	219,1	20,2	40,5	60,0	79,8	101	123	147	172	200	231	264	301	
250	273	22,4	44,7	65,9	87,4	110	134	160	187	217	250	286	325	W/m
300	323,9	24,6	48,8	71,1	94,2	118	144	171	200	232	267	305	347	
350	355,6	25,7	50,6	74,3	98,2	123	149	178	208	241	277	317	359	
400	406,4	27,5	54,1	79,1	104	131	158	188	220	255	293	334	379	
500	508	31,2	60,6	88,3	116	145	175	208	243	281	322	367	415	
600	609,6	34,6	66,8	96,9	127	158	191	226	264	305	349	397	449	
700	711,2	37,9	73,8	105	138	171	206	244	284	328	375	426	481	
800	812,8	41,2	78,5	113	149	185	221	261	303	349	399	453	512	
900	914,4	44,3	84,1	121	157	195	235	277	322	370	423	480	541	
1 000	1 016	47,4	89,6	128	167	207	248	292	340	391	445	505	569	
1 200	1 219,2	53,5	100	143	185	229	274	322	374	429	489	555	623	
wall		13,5	22,9	31,7	39,6	48,0	56,6	65,6	74,9	84,8	95,1	106	118	W/m²

NOTE 1 The maximum heat flux density is verified using the calculation procedures specified in VDI 2055 Part 2 and considering the actual installation system together with the mean values of the actual ambient conditions (temperature and wind speed) and the required spacer ring and supporting structures.

NOTE 2 Higher values prescribed for the heat flux density, e.g. by customer specification, shall be checked separately.

NOTE 3 In deviation from VDI 4610 Part 1, the heat flux densities of this table are rounded to 3 significant digits.

[1] Outer diameter of the object.

Table D.2 — Insulation thicknesses in heat insulation, in mm; verification based on reference insulation materials — Calculation according to VDI 4610 Part 1, Energy efficiency class C

DN	D_a[1]	Insulation thickness (mm), for a medium temperature (°C)												
		50	100	150	200	250	300	350	400	450	500	550	600	
20	26,9	30	40	50	60	60	70	80	80	90	90	100	110	
25	33,7	40	50	60	70	70	80	90	90	100	100	110	120	
40	48,3	40	60	70	80	90	100	110	110	120	130	140	140	
50	60,3	50	70	80	90	100	110	120	130	130	140	150	160	
80	88,9	60	80	100	120	120	130	140	150	160	170	180	190	
100	114,3	70	90	110	120	130	150	160	170	180	190	200	210	
125	139,7	70	100	120	130	150	160	170	180	200	210	220	230	
150	168,3	80	110	130	140	160	170	190	200	210	220	240	250	
200	219,1	90	120	140	160	180	190	210	220	230	250	260	280	
250	273	90	130	150	170	190	210	220	240	250	270	290	300	
300	323,9	100	140	160	180	200	220	240	260	270	290	310	320	
350	355,6	100	140	170	190	210	230	250	260	280	300	320	330	
400	406,4	110	150	180	200	220	240	260	280	300	310	330	350	
500	508	110	160	190	210	240	260	280	300	320	340	360	380	
600	609,6	120	170	200	230	250	280	300	320	340	360	380	400	
700	711,2	130	180	210	240	270	290	310	340	360	380	400	410	
800	812,8	130	180	210	250	280	300	330	350	380	400	420	430	
900	914,4	140	190	230	260	290	320	340	370	390	410	440	460	
1 000	1 016	140	200	240	270	300	330	350	380	400	430	450	480	
1 200	1 219,2	150	210	250	290	320	350	380	400	430	460	480	510	
wall		130	210	280	340	420	490	550	600	650	700	750	800	

NOTE 1 Additional requirements, such as regarding the minimum surface temperature, shall be verified separately.

NOTE 2 In deviation from VDI 4610 Part 1, the insulation thicknesses of this table are rounded up to the nearest 10.

[1] Outer diameter of the object.

- Duitsland heeft subsidie regeling obv label B

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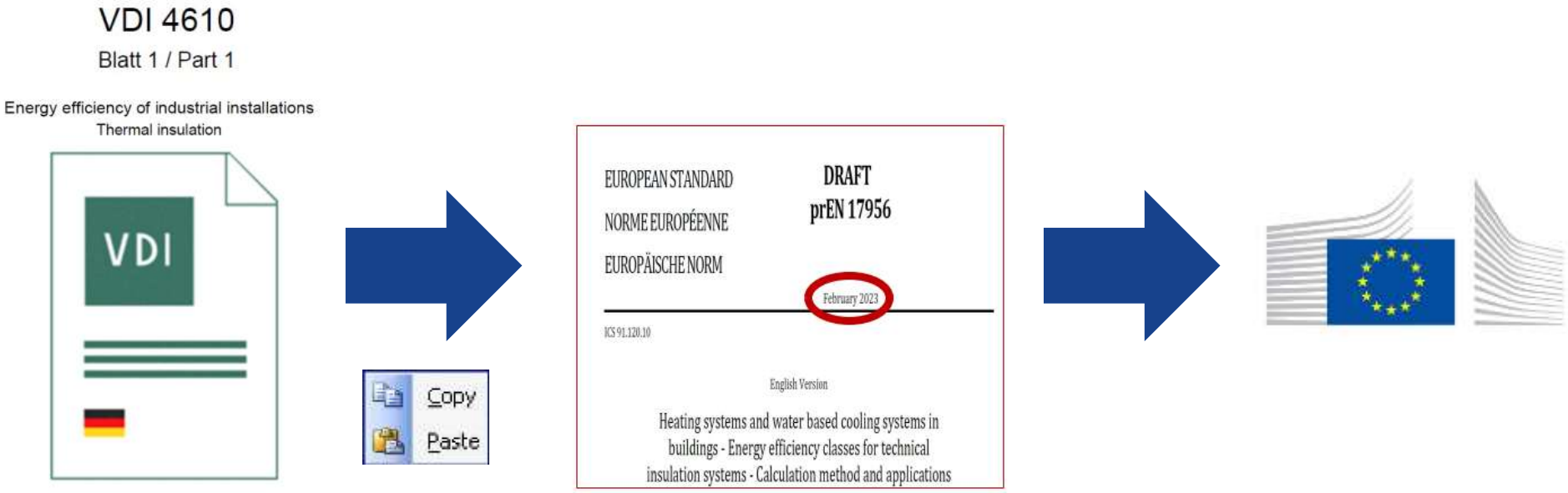
NIEUWE EUROPESE STANDAARD

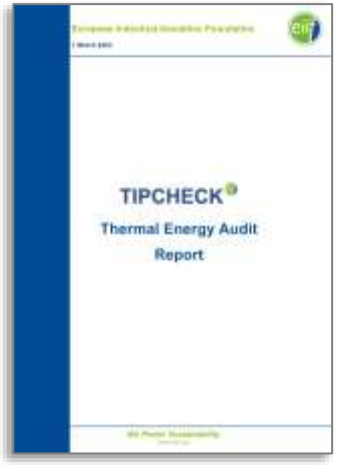
prEN 17956 – 2024

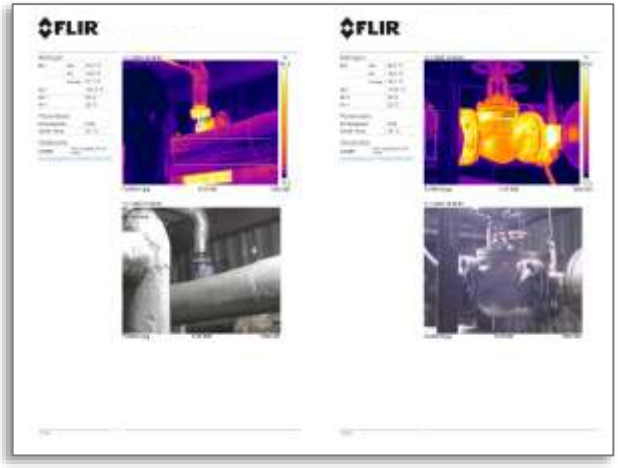


EIIF - TIPCHECK

Verbeteren van bestaande isolatiesystemen

- Energielabels in calculatiesoftware
- Online calculator





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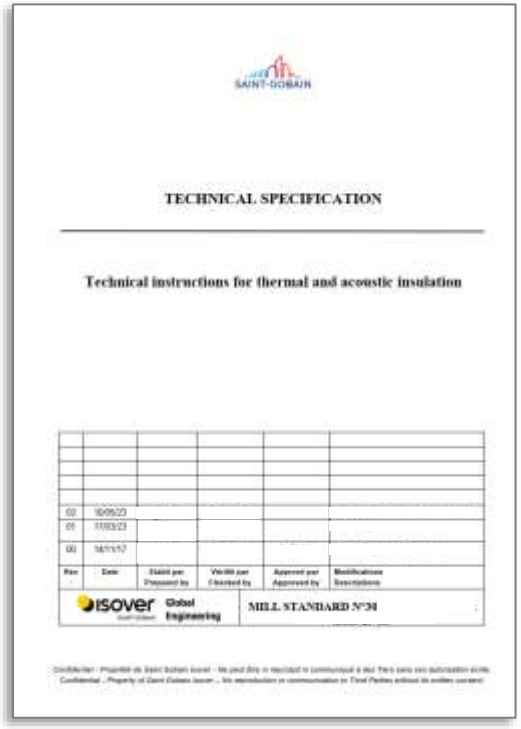
SAINT-GOBAIN ISOLATIE SPECIFICATIE

Ecologische thermische isolatie – gebaseerd op CO_2 reductie



TECHNICAL SPECIFICATION

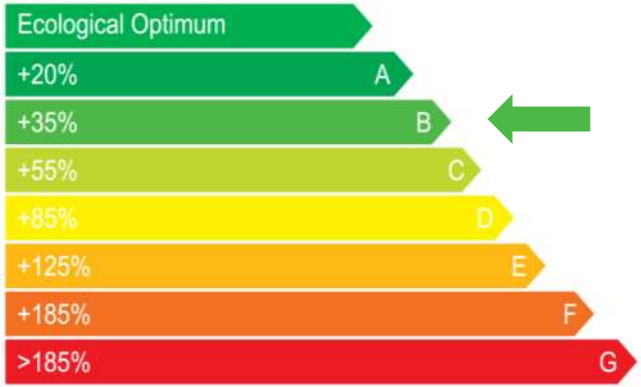
Technical instructions for thermal and acoustic insulation

02	10/05/23				
01	17/03/23				
00	16/11/17				
Rev.	Date	Établi par / Prepared by	Vérifié par / Checked by	Approuvé par / Approved by	Modifications / Descriptions
isover	Global Engineering	MILL STANDARD N°30			

For selecting the ***insulation thickness*** four insulation definition classes must be considered for each case:

4.1.1. Ecological thermal insulation (EI)

Insulation thicknesses shall be chosen for meeting the conditions stablished in VDI 4610 – part 1 as Ecological Class **B**. In Appendix II some examples for different products are provided. If a different product than the ones described in the Appendix II would be used, a new thickness calculation must be provided for the selected product in accordance with Ecological Class **B**.



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WEBINAR 30 MEI 2024 – 11.00 UUR

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