

**CALCULATION OF THE MAXIMUM  
COMPONENT HEIGHT INCLUDING  
BATTENS  
ASSY ISOTOP SCREWS**

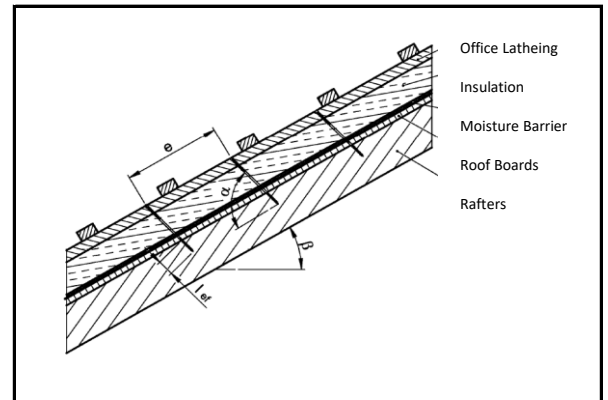


**ESPECIALLY FOR PRESSURE-  
SOFT INSULATING  
MATERIALS**

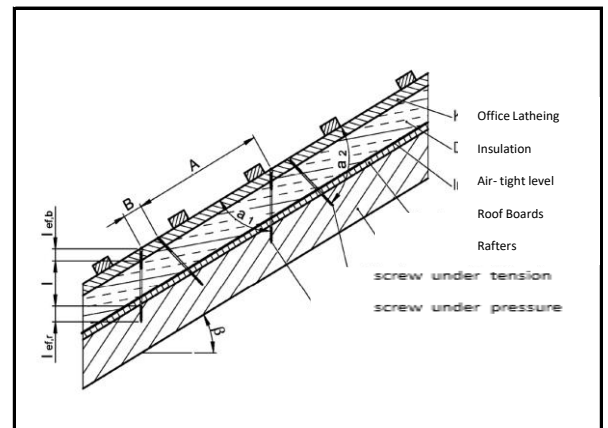
## CALCULATION OF THE MAXIMUM COMPONENT HEIGHT INCLUDING BATTENS WITH THE SPECIFIED SCREW LENGTH AND ANGLE OF THE SCREW

### Possible Isotop screw layout:

Fixing of roof-mounted insulation systems on rafters  
 Static model for screws arranged in parallel.



Fixing of roof-mounted insulation on rafters - Schematic diagram with changing angle of the screws fitted



### Estimate of the screw length with a screw connection below $\alpha = 60^\circ$ :

$$\begin{aligned}
 & \text{Thickness counter battens in mm} \\
 & + \text{Thickness of insulation in mm} \\
 & + \text{Thickness of wooden boarding in mm} \\
 & \hline
 & = \text{Component height in mm}
 \end{aligned}$$

**⇒ (Component height + anchoring depth in the rafters) x factor 1.15 = minimum screw length**

**⇒ Use of the next longest Isotop screw**

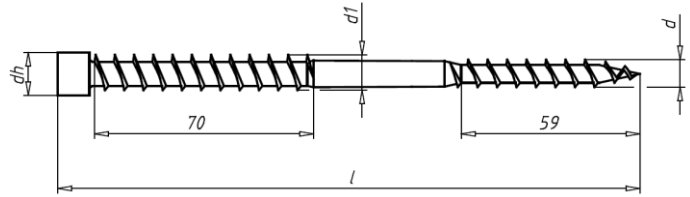
### Notes:

- |   |                             |
|---|-----------------------------|
| o Compliance with the specifications of ETA 11/0190   |                             |
| o Minimum anchoring length $l_{ef}$ of the screw in the rafters   | $l_{ef} \geq 40 \text{ mm}$ |
| o Minimum gap $e$ maximum 1.75 m  | 1.75 m                      |
| o Minimum width of the battens when using Isotop screws   | 60 mm                       |
| o Minimum thickness of the battens when using Isotop screws   | 40 mm                       |
| o Maximum thickness of the heat insulation  | 400 mm                      |
| o Minimum thickness of the OSB boarding used as battening/pressure of the heat insulation under compression | 22 mm                       |

NOTE: These are planning aids. These values must be measured by authorized persons for each project.

## DESIGN AID ASSY ISOTOP SCREWS

Calculation of the maximum insulation height incl. rafter screw-in with the specified ISOTOP screw length



Isotop l = 210mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	91	81	71	61	51	107	97	87	77	67	116	106	96	86	76	120	110	100	90	80
	60 mm	81	71	61	51	41	97	87	77	67	57	106	96	86	76	66	110	100	90	80	70
	70 mm	71	61	51	41	31	87	77	67	57	47	96	86	76	66	56	100	90	80	70	60
	80 mm	61	51	41	31	21	77	67	57	47	37	86	76	66	56	46	90	80	70	60	50
<b>Maximum possible insulation thickness in mm</b>																					

Isotop l = 230mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	109	99	89	79	69	126	116	106	96	86	136	126	116	106	96	140	130	120	110	100
	60 mm	99	89	79	69	59	116	106	96	86	76	126	116	106	96	86	130	120	110	100	90
	70 mm	89	79	69	59	49	106	96	86	76	66	116	106	96	86	76	120	110	100	90	80
	80 mm	79	69	59	49	39	96	86	76	66	56	106	96	86	76	66	110	100	90	80	70
<b>Maximum possible insulation thickness in mm</b>																					

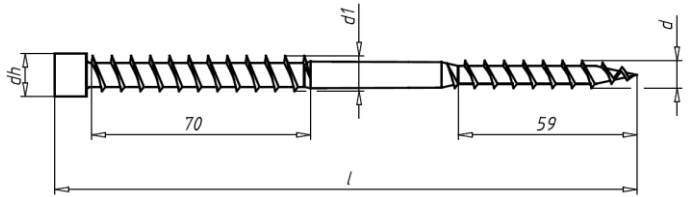
Isotop l = 250mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	126	116	106	96	86	144	134	124	114	104	156	146	136	126	116	160	150	140	130	100
	60 mm	116	106	96	86	76	134	124	114	104	94	146	136	126	116	106	150	140	130	120	90
	70 mm	106	96	86	76	66	124	114	104	94	84	136	126	116	106	96	140	130	120	110	80
	80 mm	96	86	76	66	56	114	104	94	84	74	126	116	106	96	86	130	120	110	100	70
<b>Maximum possible insulation thickness in mm</b>																					

Isotop l = 270mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	143	133	123	113	103	163	153	143	133	123	175	165	155	145	135	180	170	160	150	140
	60 mm	133	123	113	103	93	153	143	133	123	113	165	155	145	135	125	170	160	150	140	130
	70 mm	123	113	103	93	83	143	133	123	113	103	155	145	135	125	115	160	150	140	130	120
	80 mm	113	103	93	83	73	133	123	113	103	93	145	135	125	115	105	150	140	130	120	110
<b>Maximum possible insulation thickness in mm</b>																					

NOTE: These are planning aids. These values must be measured by authorized persons for each project.

## DESIGN AID ASSY ISOTOP SCREWS

Calculation of the maximum insulation height incl. rafter screw-in with the specified ISOTOP screw length



Isotop l = 300mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	169	159	149	139	129	191	181	171	161	151	205	195	185	175	165	210	200	190	180	170
	60 mm	159	149	139	129	119	181	171	161	151	141	195	185	175	165	155	200	190	180	170	160
	70 mm	149	139	129	119	109	171	161	151	141	131	185	175	165	155	145	190	180	170	160	150
	80 mm	139	129	119	109	99	161	151	141	131	121	175	165	155	145	135	180	170	160	150	140
<b>Maximum possible insulation thickness in mm</b>																					

Isotop l = 330mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	195	185	175	165	155	220	210	200	190	180	234	224	214	204	194	240	230	220	210	200
	60 mm	185	175	165	155	145	210	200	190	180	170	224	214	204	194	184	230	220	210	200	190
	70 mm	175	165	155	145	135	200	190	180	170	160	214	204	194	184	174	220	210	200	190	180
	80 mm	165	155	145	135	125	190	180	170	160	150	204	194	184	174	164	210	200	190	180	170
<b>Maximum possible insulation thickness in mm</b>																					

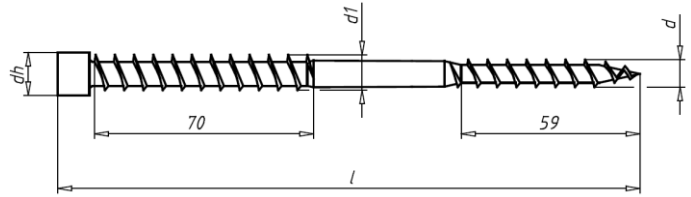
Isotop l = 360mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	221	211	201	191	181	248	238	228	218	208	264	254	244	234	224	270	260	250	240	230
	60 mm	211	201	191	181	171	238	228	218	208	198	254	244	234	224	214	260	250	240	230	220
	70 mm	201	191	181	171	161	228	218	208	198	188	244	234	224	214	204	250	240	230	220	210
	80 mm	191	181	171	161	151	218	208	198	188	178	234	224	214	204	194	240	230	220	210	200
<b>Maximum possible insulation thickness in mm</b>																					

Isotop l = 400mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	256	246	236	226	216	285	275	265	255	245	303	293	283	273	263	310	300	290	280	270
	60 mm	246	236	226	216	206	275	265	255	245	235	293	283	273	263	253	300	290	280	270	260
	70 mm	236	226	216	206	196	265	255	245	235	225	283	273	263	253	243	290	280	270	260	250
	80 mm	226	216	206	196	186	255	245	235	225	215	273	263	253	243	233	280	270	260	250	240
<b>Maximum possible insulation thickness in mm</b>																					

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## DESIGN AID ASSY ISOTOP SCREWS

Calculation of the maximum insulation height incl. rafter screw-in with the specified ISOTOP screw length



Isotop l = 430mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	282	272	262	252	242	314	304	294	284	274	333	323	313	303	293	340	330	320	310	300
	60 mm	272	262	252	242	232	304	294	284	274	264	323	313	303	293	283	330	320	310	300	290
	70 mm	262	252	242	232	222	294	284	274	264	254	313	303	293	283	273	320	310	300	290	280
	80 mm	252	242	232	222	212	284	274	264	254	244	303	293	283	273	263	310	300	290	280	270
Maximum possible insulation thickness in mm																					

Isotop l = 460mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	308	298	288	278	268	342	332	322	312	302	363	353	343	333	323	370	360	350	340	330
	60 mm	298	288	278	268	258	332	322	312	302	292	353	343	333	323	313	360	350	340	330	320
	70 mm	288	278	268	258	248	322	312	302	292	282	343	333	323	313	303	350	340	330	320	310
	80 mm	278	268	258	248	238	312	302	292	282	272	333	323	313	303	293	340	330	320	310	300
Maximum possible insulation thickness in mm																					

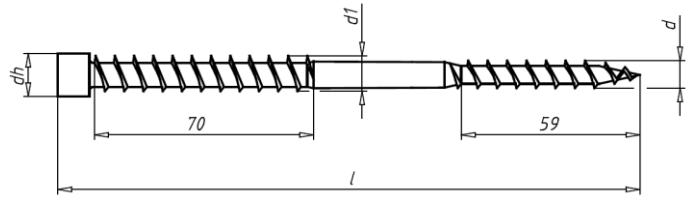
Isotop l = 480mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	325	315	305	295	285	361	351	341	331	321	382	372	362	352	342	390	380	370	360	350
	60 mm	315	305	295	285	275	351	341	331	321	311	372	362	352	342	332	380	370	360	350	340
	70 mm	305	295	285	275	265	341	331	321	311	301	362	352	342	332	322	370	360	350	340	330
	80 mm	295	285	275	265	255	331	321	311	301	291	352	342	332	322	312	360	350	340	330	320
Maximum possible insulation thickness in mm																					

Isotop l = 500mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	343	333	323	313	303	379	369	359	349	339	402	392	382	372	362	410	400	390	380	370
	60 mm	333	323	313	303	293	369	359	349	339	329	392	382	372	362	352	400	390	380	370	360
	70 mm	323	313	303	293	283	359	349	339	329	319	382	372	362	352	342	390	380	370	360	350
	80 mm	313	303	293	283	273	349	339	329	319	309	372	362	352	342	332	380	370	360	350	340
Maximum possible insulation thickness in mm																					

NOTE: These are planning aids. These values must be measured by authorized persons for each project.

## DESIGN AID ASSY ISOTOP SCREWS

Calculation of the maximum insulation height incl. rafter screw-in with the specified ISOTOP screw length



Isotop l = 530mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	368	358	348	338	328	408	398	388	378	368	431	421	411	401	391	440	430	420	410	400
	60 mm	358	348	338	328	318	398	388	378	368	358	421	411	401	391	381	430	420	410	400	390
	70 mm	348	338	328	318	308	388	378	368	358	348	411	401	391	381	371	420	410	400	390	380
	80 mm	338	328	318	308	298	378	368	358	348	338	401	391	381	371	361	410	400	390	380	370
<b>Maximum possible insulation thickness in mm</b>																					

Isotop l = 560mm or alternatively ASSY plus VG																					
Angle of screw $\alpha$		60°					70°					80°					90°				
Battens in mm		40	50	60	70	80	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
Screw-in depth into the rafters	50 mm	394	384	374	364	354	436	426	416	406	396	461	451	441	431	421	470	460	450	440	430
	60 mm	384	374	364	354	344	426	416	406	396	386	451	441	431	421	411	460	450	440	430	420
	70 mm	374	364	354	344	334	416	406	396	386	376	441	431	421	411	401	450	440	430	420	410
	80 mm	364	354	344	334	324	406	396	386	376	366	431	421	411	401	391	440	430	420	410	400
<b>Maximum possible insulation thickness in mm</b>																					

NOTE: These are planning aids. These values must be measured by authorized persons for each project.

# ASSY® ISOTOP

## THE SCREWS FOR SOFT RAFTER-MOUNTED AND FACADE INSULATION

Adolf Würth GmbH & Co.KG  
D-74650 Künzelsau  
T +049 7940 15-0  
F +49 7940 15-1000  
info@wuerth.com  
www.wuerth.de

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