

Cross sectional data - Areco TP/VP45

Table 1

Sheet thickness, nominal	t_{nom}	mm	0,50	0,60	0,65	0,70	0,75
Sheet thickness, in calculation	t_{ber}	mm	0,451	0,548	0,597	0,646	0,695
Yield point	f_{ty}	N/mm ²	280	280	350	350	350
Mass	m	kg/m	5,00	6,00	6,50	7,00	7,50
Dead weight including side overlap	g	kN/m ²	0,056	0,067	0,072	0,078	0,083
Bearing resistance $l_s=50$ mm	R_d	kN/m	12,5	17,8	23,2	26,7	30,5
Bearing resistance $l_s=100$ mm	R_d	kN/m	16,4	23,2	30,1	34,6	39,4
Narrow flange under pressure	M_d	kNm/m	1,29	1,84	2,59	2,93	3,22
2:nd moment of area	I_{def}	mm ⁴ /mm	152	193	210	227	245
Wide flange under pressure	M_d	kNm/m	1,32	1,88	2,53	2,83	3,13
2:nd moment of area	I_{def}	mm ⁴ /mm	126	161	174	193	211

Data for stressed skin calculations - Areco TP/VP45

Table 2

Thickness	Shear buckling			End support		
	Flange	Web	Global	Framework bending effects	Reaction of purlins to stressed skin effect	Tensile force in fasteners
t_{nom}	V_f	V_w	$L^2 V_{gd}$	V_d	R_d/V	F_c2/V
mm	kN/m	kN/m	kN/m	kN/m		m
0,50	25,0	33,7	73	5,5	0,75	56
0,60	44,4	52,1	98	7,7	0,75	56
0,65	57,9	69,1	112	11,3	0,75	56
0,70	68,9	80,9	126	13,0	0,75	56
0,75	79,8	93,6	140	14,6	0,75	56

Foot traffic recommended by Areco

Table 3




Division into sections	0,50	0,60	0,65	0,70	0,75
Single section	0,80	1,60	1,80	2,30	2,80
Multiple section	1,00	1,80	2,70	3,60	4,50

Areco TP45

Maximum loads in kN/m²

ROOF

Table 4

Thickness (mm)	Limitations	Span L (m)												Bearing combination
		1,20	1,50	1,80	2,10	2,40	2,70	3,00	3,30	3,60	3,90	4,20	4,50	
0,50	Moment	6,524	4,175	2,900	2,130	1,631	1,289	1,044	0,863	0,725	0,618	0,533	0,464	 <p>SHEET LOADED ON TWO SUPPORT</p>
	Deflection	15,810	8,094	4,684	2,950	1,976	1,388	1,012	0,760	0,586	0,461	0,369	0,300	
	Wind suction	7,177	4,593	3,190	2,343	1,794	1,418	1,148	0,949	0,797	0,679	0,586	0,510	
0,60	Moment	9,312	5,959	4,139	3,041	2,328	1,839	1,490	1,231	1,035	0,882	0,760	0,662	
	Deflection	20,010	10,240	5,928	3,733	2,501	1,757	1,281	0,962	0,741	0,583	0,467	0,379	
	Wind suction	10,240	6,555	4,552	3,345	2,561	2,023	1,639	1,354	1,138	0,970	0,836	0,728	
0,65	Moment	13,080	8,368	5,811	4,270	3,269	2,583	2,092	1,729	1,453	1,238	1,067	0,930	
	Deflection	21,800	11,160	6,458	4,067	2,725	1,914	1,395	1,048	0,807	0,635	0,508	0,413	
	Wind suction	14,380	9,205	6,393	4,697	3,596	2,841	2,301	1,902	1,598	1,362	1,174	1,023	
0,70	Moment	14,790	9,464	6,572	4,829	3,697	2,921	2,366	1,955	1,643	1,400	1,207	1,052	
	Deflection	23,590	12,080	6,988	4,401	2,948	2,071	1,511	1,134	0,874	0,687	0,550	0,447	
	Wind suction	16,270	10,410	7,230	5,312	4,067	3,213	2,603	2,151	1,807	1,540	1,328	1,157	
0,75	Moment	16,270	10,410	7,230	5,312	4,067	3,213	2,603	2,151	1,808	1,540	1,328	1,157	
	Deflection	25,380	12,990	7,519	4,735	3,172	2,228	1,624	1,220	0,940	0,739	0,592	0,481	
	Wind suction	17,890	11,450	7,953	5,843	4,474	3,535	2,863	2,366	1,988	1,694	1,461	1,273	
0,50	Upplag 50	4,691	3,289	2,439	1,884	1,500	1,223	1,016	0,858	0,735	0,636	0,551	0,480	 <p>SHEET LOADED ON THREE SUPPORT</p>
	Upplag 100	5,692	3,888	2,827	2,149	1,689	1,363	1,111	0,914	0,766	0,651	0,560	0,487	
	Deflection	33,640	17,220	9,966	6,276	4,205	2,953	2,153	1,617	1,246	0,980	0,785	0,638	
	Wind suction	5,160	3,618	2,683	2,072	1,649	1,345	1,118	0,944	0,808	0,700	0,612	0,539	
0,60	Upplag 50	6,675	4,860	3,472	2,681	2,134	1,740	1,447	1,222	1,046	0,906	0,785	0,683	
	Upplag 100	8,077	5,521	4,016	3,054	2,401	1,938	1,582	1,302	1,091	0,927	0,797	0,693	
	Deflection	42,880	21,950	12,700	8,001	5,360	3,764	2,744	2,062	1,588	1,249	1,000	0,813	
	Wind suction	7,342	5,148	3,819	2,949	2,348	1,915	1,592	1,344	1,151	0,996	0,871	0,768	
0,65	Upplag 50	8,848	6,217	4,618	3,571	2,846	2,323	1,932	1,633	1,399	1,211	1,058	0,921	
	Upplag 100	10,710	7,335	5,345	4,070	3,204	2,588	2,132	1,755	1,470	1,249	1,074	0,934	
	Deflection	46,510	23,810	13,780	8,678	5,813	4,083	2,976	2,236	1,723	1,355	1,085	0,882	
	Wind suction	11,780	8,068	5,879	4,477	3,524	2,847	2,348	1,970	1,676	1,444	1,257	1,104	
0,70	Upplag 50	10,040	7,040	5,222	4,033	3,212	2,619	2,177	1,839	1,574	1,363	1,182	1,029	
	Upplag 100	12,120	8,287	6,030	4,587	3,608	2,913	2,382	1,961	1,642	1,396	1,201	1,044	
	Deflection	51,010	26,120	15,110	9,517	6,376	4,478	3,264	2,453	1,889	1,486	1,190	0,967	
	Wind suction	13,330	9,116	6,633	5,046	3,969	3,204	2,641	2,214	1,884	1,622	1,411	1,239	
0,75	Upplag 50	11,280	7,900	5,853	4,516	3,593	2,928	2,433	2,054	1,757	1,521	1,312	1,141	
	Upplag 100	13,600	9,282	6,746	5,127	4,029	3,250	2,643	2,175	1,822	1,548	1,332	1,158	
	Deflection	55,580	28,450	16,470	10,370	6,947	4,879	3,557	2,672	2,058	1,619	1,296	1,054	
	Wind suction	14,950	10,210	7,420	5,639	4,432	3,576	2,946	2,469	2,100	1,807	1,572	1,380	
0,50	Upplag 50	5,619	3,960	2,949	2,285	1,824	1,490	1,241	1,050	0,900	0,780	0,683	0,600	 <p>SHEET LOADED ON FOUR SUPPORT</p>
	Upplag 100	6,897	4,733	3,453	2,632	2,073	1,676	1,383	1,147	0,961	0,816	0,702	0,610	
	Deflection	26,411	13,521	7,825	4,928	3,301	2,319	1,690	1,270	0,978	0,769	0,616	0,501	
	Wind suction	6,181	4,356	3,244	2,513	2,006	1,639	1,365	1,155	0,990	0,858	0,751	0,663	
0,60	Upplag 50	7,994	5,635	4,197	3,251	2,596	2,121	1,767	1,495	1,281	1,111	0,972	0,855	
	Upplag 100	9,785	6,718	4,903	3,738	2,946	2,382	1,966	1,634	1,368	1,162	1,000	0,869	
	Deflection	33,670	17,240	9,976	6,282	4,208	2,956	2,155	1,619	1,247	0,981	0,785	0,638	
	Wind suction	8,794	6,198	4,616	3,577	2,855	2,333	1,943	1,644	1,409	1,222	1,069	0,944	
0,65	Upplag 50	10,590	7,478	5,578	4,328	3,458	2,829	2,358	1,996	1,712	1,485	1,300	1,148	
	Upplag 100	12,960	8,917	6,520	4,978	3,927	3,178	2,625	2,202	1,844	1,566	1,347	1,171	
	Deflection	36,520	18,700	10,820	6,814	4,565	3,206	2,337	1,756	1,352	1,064	0,852	0,692	
	Wind suction	14,250	9,808	7,172	5,476	4,320	3,496	2,888	2,426	2,066	1,782	1,552	1,364	
0,70	Upplag 50	12,020	8,475	6,312	4,891	3,905	3,192	2,658	2,249	1,928	1,671	1,463	1,288	
	Upplag 100	14,680	10,080	7,362	5,615	4,425	3,579	2,954	2,461	2,061	1,750	1,505	1,308	
	Deflection	40,050	20,510	11,870	7,473	5,006	3,516	2,563	1,926	1,483	1,167	0,934	0,759	
	Wind suction	16,150	11,090	8,098	6,176	4,868	3,936	3,249	2,728	2,323	2,002	1,744	1,532	
0,75	Upplag 50	13,520	9,518	7,080	5,480	4,371	3,570	2,972	2,513	2,153	1,866	1,632	1,429	
	Upplag 100	16,480	11,300	8,240	6,279	4,945	3,996	3,297	2,730	2,286	1,942	1,670	1,451	
	Deflection	43,641	22,341	12,931	8,142	5,455	3,831	2,793	2,098	1,616	1,271	1,018	0,827	
	Wind suction	18,130	12,430	9,065	6,907	5,439	4,395	3,626	3,043	2,590	2,232	1,943	1,707	

Explanations




- Moment Bearing capacity in field, calculated for safety class 2
- Bearer 50 Bearing capacity for intermediate bearer with $l_1 = 50$ mm, calculated for safety class 2
- Bearer 100 Bearing capacity for intermediate bearer with $l_1 = 100$ mm, calculated for safety class 2
- Deflection Deflection L/90
- Wind suction Bearing capacity for upwardly directed wind load, calculated for safety class 1

Areco VP45

Maximum loads in kN/m²

WALL

Table 5

Thickness (mm)	Limitations	Span L (m)												Bearing combination
		1,20	1,50	1,80	2,10	2,40	2,70	3,00	3,30	3,60	3,90	4,20	4,50	
0,50	Moment	7,317	4,683	3,252	2,389	1,829	1,445	1,171	0,968	0,813	0,693	0,597	0,520	 <p>SHEET LOADED ON TWO SUPPORT</p>
	Deflection	13,040	6,677	3,864	2,433	1,630	1,145	0,835	0,627	0,483	0,380	0,304	0,247	
	Wind suction	7,317	4,683	3,252	2,389	1,829	1,445	1,171	0,968	0,813	0,693	0,597	0,520	
0,60	Moment	10,420	6,671	4,632	3,403	2,606	2,059	1,668	1,378	1,158	0,987	0,851	0,741	
	Deflection	16,700	8,549	4,947	3,115	2,087	1,466	1,069	0,803	0,618	0,486	0,389	0,317	
	Wind suction	10,420	6,671	4,632	3,403	2,606	2,059	1,668	1,378	1,158	0,987	0,851	0,741	
0,65	Moment	14,050	8,989	6,242	4,586	3,511	2,774	2,247	1,857	1,561	1,330	1,147	0,999	
	Deflection	18,060	9,248	5,352	3,370	2,258	1,586	1,156	0,868	0,669	0,526	0,421	0,343	
	Wind suction	14,050	8,989	6,242	4,586	3,511	2,774	2,247	1,857	1,561	1,330	1,147	0,999	
0,70	Moment	15,700	10,050	6,976	5,125	3,924	3,100	2,511	2,076	1,744	1,486	1,281	1,116	
	Deflection	19,970	10,220	5,917	3,726	2,496	1,753	1,278	0,960	0,740	0,582	0,466	0,379	
	Wind suction	15,700	10,050	6,976	5,125	3,924	3,100	2,511	2,076	1,744	1,486	1,281	1,116	
0,75	Moment	17,410	11,140	7,738	5,685	4,353	3,439	2,786	2,302	1,935	1,648	1,421	1,238	
	Deflection	21,920	11,220	6,495	4,090	2,740	1,924	1,403	1,054	0,812	0,639	0,511	0,416	
	Wind suction	17,410	11,140	7,738	5,685	4,353	3,439	2,786	2,302	1,935	1,648	1,421	1,238	
0,50	Upplag 50	5,110	3,578	2,651	2,046	1,628	1,327	1,102	0,931	0,796	0,689	0,595	0,518	 <p>SHEET LOADED ON THREE SUPPORT</p>
	Upplag 100	6,196	4,227	3,07	2,332	1,832	1,478	1,198	0,986	0,826	0,702	0,604	0,525	
	Deflection	35,860	18,360	10,620	6,691	4,482	3,148	2,295	1,724	1,328	1,045	0,836	0,680	
	Wind suction	5,110	3,578	2,651	2,046	1,628	1,327	1,102	0,931	0,796	0,689	0,602	0,531	
0,60	Upplag 50	7,278	5,098	3,778	2,916	2,320	1,891	1,571	1,327	1,135	0,983	0,849	0,739	
	Upplag 100	8,801	6,009	4,367	3,318	2,608	2,104	1,71	1,408	1,179	1,002	0,862	0,749	
	Deflection	45,540	23,320	13,490	8,497	5,692	3,998	2,914	2,190	1,687	1,327	1,062	0,864	
	Wind suction	7,278	5,098	3,778	2,916	2,320	1,891	1,571	1,327	1,135	0,983	0,859	0,757	
0,65	Upplag 50	9,847	6,929	5,154	3,989	3,181	2,598	2,162	1,828	1,566	1,357	1,187	1,037	
	Upplag 100	11,920	8,183	5,970	4,551	3,585	2,898	2,391	1,977	1,656	1,407	1,210	1,052	
	Deflection	49,510	25,350	14,670	9,237	6,188	4,346	3,168	2,38	1,834	1,442	1,155	0,939	
	Wind suction	9,847	6,929	5,154	3,989	3,181	2,598	2,162	1,828	1,566	1,357	1,187	1,037	
0,70	Upplag 50	11,240	7,900	5,871	4,540	3,619	2,954	2,458	2,078	1,779	1,541	1,348	1,173	
	Upplag 100	13,590	9,314	6,790	5,172	4,072	3,290	2,714	2,236	1,872	1,591	1,369	1,190	
	Deflection	53,910	27,600	15,970	10,06	6,739	4,733	3,450	2,592	1,997	1,570	1,257	1,022	
	Wind suction	11,240	7,900	5,871	4,540	3,619	2,954	2,458	2,078	1,779	1,541	1,348	1,189	
0,75	Upplag 50	12,590	8,827	6,548	5,058	4,027	3,284	2,730	2,306	1,974	1,709	1,483	1,290	
	Upplag 100	15,180	10,380	7,555	5,748	4,521	3,650	2,988	2,459	2,060	1,750	1,506	1,309	
	Deflection	58,350	29,880	17,290	10,890	7,294	5,123	3,734	2,806	2,161	1,700	1,361	1,106	
	Wind suction	12,590	8,827	6,548	5,058	4,027	3,284	2,730	2,306	1,974	1,709	1,494	1,318	
0,50	Upplag 50	6,124	4,310	3,207	2,482	1,980	1,617	1,346	1,139	0,976	0,845	0,740	0,648	 <p>SHEET LOADED ON FOUR SUPPORT</p>
	Upplag 100	7,512	5,148	3,751	2,857	2,249	1,817	1,499	1,238	1,036	0,880	0,757	0,658	
	Deflection	28,160	14,420	8,343	5,254	3,519	2,472	1,802	1,354	1,043	0,820	0,657	0,534	
	Wind suction	6,124	4,310	3,207	2,482	1,980	1,617	1,346	1,139	0,976	0,845	0,740	0,653	
0,60	Upplag 50	8,721	6,140	4,569	3,538	2,822	2,306	1,919	1,623	1,391	1,205	1,055	0,925	
	Upplag 100	10,670	7,316	5,334	4,064	3,201	2,586	2,134	1,767	1,479	1,256	1,081	0,939	
	Deflection	35,760	18,310	10,590	6,672	4,469	3,139	2,288	1,719	1,324	1,042	0,834	0,678	
	Wind suction	8,721	6,140	4,569	3,538	2,822	2,306	1,919	1,623	1,391	1,205	1,055	0,931	
0,65	Upplag 50	11,780	8,330	6,221	4,831	3,864	3,162	2,637	2,234	1,917	1,663	1,457	1,286	
	Upplag 100	14,420	9,942	7,278	5,563	4,392	3,557	2,939	2,47	2,077	1,764	1,517	1,319	
	Deflection	38,870	19,900	11,520	7,253	4,859	3,413	2,488	1,869	1,440	1,132	0,907	0,737	
	Wind suction	11,780	8,330	6,221	4,831	3,864	3,162	2,637	2,234	1,917	1,663	1,457	1,286	
0,70	Upplag 50	13,450	9,502	7,090	5,502	4,398	3,598	2,999	2,539	2,178	1,889	1,654	1,461	
	Upplag 100	16,440	11,320	8,281	6,325	4,991	4,040	3,337	2,804	2,349	1,995	1,716	1,492	
	Deflection	42,330	21,670	12,540	7,898	5,291	3,716	2,709	2,035	1,568	1,233	0,987	0,803	
	Wind suction	13,450	9,502	7,090	5,502	4,398	3,598	2,999	2,539	2,178	1,889	1,654	1,461	
0,75	Upplag 50	15,070	10,630	7,915	6,133	4,897	4,002	3,334	2,820	2,418	2,096	1,834	1,615	
	Upplag 100	18,380	12,630	9,223	7,035	5,545	4,484	3,702	3,086	2,584	2,195	1,888	1,641	
	Deflection	45,820	23,460	13,570	8,549	5,727	4,022	2,932	2,203	1,697	1,335	1,069	0,869	
	Wind suction	15,070	10,630	7,915	6,133	4,897	4,002	3,334	2,820	2,418	2,096	1,834	1,619	

Explanations

- Moment Bearing capacity in field, calculated for safety class 1
- Bearer 50 Bearing capacity for intermediate bearer with $l_1 = 50$ mm, calculated for safety class 1
- Bearer 100 Bearing capacity for intermediate bearer with $l_1 = 100$ mm, calculated for safety class 1
- Deflection Deflection L/90
- Wind suction Bearing capacity for upwardly directed wind load, calculated for safety class 1