

Versa-Dek® 3.5 LS Acoustical
Allowable Diaphragm Shear Values, S (plf) and Stiffness Factors, G' (kpi)



SUPPORT CONNECTION: 1/2" Eff. Weld Diameter		S = Allowable Diaphragm Shear (lbs/ft)									
SIDELAP CONNECTION: 1-1/2" Seam Welds		G' = Stiffness Factor (kips/in.)									
ATTACHMENT PATTERN: 24 J 3		DECK SPAN - C to C SUPPORT									
GAGE	SIDE LAP SPACING	FACTOR	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"	
20 0.0358"	6"	S	794	777	766	758	752	747	743	618*	
		G'	9.1	10.3	11.4	12.3	13.1	13.8	14.4	14.9	
	12"	S	751	733	721	711	704	698	694	618*	
		G'	9.0	10.2	11.2	12.1	12.9	13.5	14.1	14.6	
	18"	S	633	607	589	575	565	557	550	544	
		G'	8.9	10.1	11.1	11.9	12.7	13.3	13.9	14.3	
	24"	S	555	525	503	487	475	465	457	451	
		G'	8.8	10.0	11.0	11.8	12.5	13.1	13.6	14.1	
	30"	S	502	468	444	427	413	403	394	387	
		G'	8.8	9.9	10.9	11.7	12.3	12.9	13.4	13.9	
	36"	S	462	424	399	381	367	357	349	342	
		G'	8.7	9.8	10.8	11.5	12.2	12.7	13.2	13.6	
18 0.0474"	6"	S	1070	1047	1032	1021	1013	1006	1001	939*	
		G'	16.1	18.0	19.5	21.0	22.1	23.1	23.9	24.6	
	12"	S	1012	988	971	958	949	941	935	929	
		G'	15.8	17.7	19.2	20.5	21.5	22.4	23.2	23.9	
	18"	S	853	818	793	775	761	750	741	733	
		G'	15.6	17.4	18.8	20.0	21.0	21.9	22.6	23.2	
	24"	S	748	707	677	656	639	626	616	607	
		G'	15.4	17.1	18.5	19.6	20.6	21.4	22.0	22.6	
	30"	S	676	630	598	575	557	542	531	521	
		G'	15.3	16.9	18.2	19.3	20.2	20.9	21.6	22.1	
	36"	S	622	571	537	513	495	481	469	460	
		G'	15.1	16.7	18.0	19.0	19.8	20.5	21.1	21.6	
16 0.0598"	6"	S	1374	1345	1325	1311	1301	1293	1286	1281	
		G'	26.0	28.9	31.1	33.0	34.5	35.8	37.0	37.9	
	12"	S	1300	1269	1247	1231	1219	1209	1201	1194	
		G'	25.4	28.1	30.2	31.9	33.3	34.5	35.5	36.4	
	18"	S	1095	1051	1019	996	978	963	952	942	
		G'	25.0	27.5	29.4	31.0	32.3	33.4	34.3	35.1	
	24"	S	961	908	870	843	821	805	791	780	
		G'	24.6	27.0	28.8	30.3	31.4	32.4	33.2	34.0	
	30"	S	869	810	769	738	715	697	682	670	
		G'	24.3	26.5	28.3	29.6	30.7	31.6	32.3	33.0	
	36"	S	799	734	690	659	636	618	603	591	
		G'	24.0	26.2	27.8	29.1	30.1	30.9	31.6	32.1	

SUPPORT CONNECTION: 1/2" Eff. Weld Diameter
SIDELAP CONNECTION: 1-1/2" Seam Welds
ATTACHMENT PATTERN: 24 J 6

SUPPORT CONNECTION: 1/2" Eff. Weld Diameter		S = Allowable Diaphragm Shear (lbs/ft)									
SIDELAP CONNECTION: 1-1/2" Seam Welds		G' = Stiffness Factor (kips/in.)									
ATTACHMENT PATTERN: 24 J 6		DECK SPAN - C to C SUPPORT									
GAGE	SIDE LAP SPACING	FACTOR	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"	
20 0.0358"	6"	S	894	857	832	815	802	791	747*	618*	
		G'	9.1	10.3	11.4	12.3	13.1	13.8	14.4	15.0	
	12"	S	894	857	832	815	802	791	747*	618*	
		G'	9.0	10.2	11.3	12.1	12.9	13.6	14.1	14.6	
	18"	S	772	726	694	671	654	640	629	618*	
		G'	8.9	10.1	11.1	12.0	12.7	13.3	13.9	14.4	
	24"	S	639	593	563	541	524	511	501	493	
		G'	8.8	10.0	11.0	11.8	12.5	13.1	13.7	14.1	
	30"	S	557	511	481	459	442	430	419	411	
		G'	8.8	9.9	10.9	11.7	12.4	13.0	13.5	13.9	
	36"	S	503	457	426	404	388	375	365	357	
		G'	8.8	9.9	10.8	11.6	12.2	12.8	13.3	13.7	
18 0.0474"	6"	S	1204	1154	1121	1098	1080	1066	1055	939*	
		G'	16.1	18.1	19.7	21.0	22.1	23.1	23.9	24.6	
	12"	S	1204	1154	1121	1098	1080	1066	1055	939*	
		G'	15.8	17.7	19.2	20.5	21.5	22.4	23.2	23.9	
	18"	S	1040	978	935	904	881	863	848	836	
		G'	15.6	17.4	18.9	20.1	21.1	21.9	22.6	23.3	
	24"	S	861	799	758	728	706	689	675	664	
		G'	15.5	17.2	18.6	19.7	20.7	21.4	22.1	22.7	
	30"	S	751	689	647	618	596	579	565	554	
		G'	15.3	17.0	18.3	19.4	20.3	21.0	21.7	22.2	
	36"	S	677	615	574	545	522	505	492	480	
		G'	15.2	16.9	18.1	19.1	20.0	20.7	21.3	21.8	
16 0.0598"	6"	S	1547	1483	1440	1410	1387	1369	1355	1329*	
		G'	26.1	28.9	31.2	33.0	34.6	35.9	37.0	37.9	
	12"	S	1547	1483	1440	1410	1387	1369	1355	1329*	
		G'	25.5	28.2	30.3	32.0	33.4	34.6	35.6	36.5	
	18"	S	1336	1256	1201	1162	1132	1108	1089	1074	
		G'	25.1	27.6	29.6	31.2	32.5	33.5	34.4	35.2	
	24"	S	1106	1026	973	936	907	885	867	853	
		G'	24.8	27.2	29.0	30.5	31.7	32.7	33.5	34.2	
	30"	S	964	885	832	794	766	743	726	711	
		G'	24.5	26.8	28.6	29.9	31.0	31.9	32.7	33.3	
	36"	S	870	790	737	700	671	649	631	617	
		G'	24.3	26.5	28.2	29.4	30.4	31.3	31.9	32.5	

NOTES: The nominal shear values, S_n, have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values, S, for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: φ = .55 for LRFD and Ω = 3.00 for ASD for welds.
Wind: φ = .70 for LRFD and Ω = 2.35 for ASD for welds.
Other: φ = .60 for LRFD and Ω = 2.65 for ASD for welds.
 Calculations are based on a "Single Span Condition". For "Other Span Conditions" contact the Metal Dek Group for additional information.
 F_y = 40 ksi and F_u = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.

Versa-Dek® 3.5 LS Acoustical
Allowable Diaphragm Shear Values, S (plf) and Stiffness Factors, G' (kpi)



SUPPORT CONNECTION: 1/2" Effective Weld Diameter
 SIDELAP CONNECTION: S/L Screws #10
 ATTACHMENT PATTERN: 24 J 3

S = Allowable Diaphragm Shear (lbs/ft)
 G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"
20 0.0358"	6"	S	576	555	540	530	522	516	510	506
		G'	8.9	10.1	11.2	12.0	12.8	13.4	14.0	14.5
	12"	S	375	351	336	324	316	309	304	300
		G'	8.7	9.9	10.8	11.6	12.3	12.9	13.4	13.8
	18"	S	290	266	250	239	231	224	219	214
		G'	8.6	9.7	10.5	11.3	11.9	12.4	12.9	13.3
	24"	S	247	223	208	196	188	181	176	172
		G'	8.5	9.5	10.3	11.0	11.6	12.1	12.5	12.8
	30"	S	221	198	182	171	162	156	150	146
		G'	8.4	9.4	10.1	10.8	11.3	11.7	12.1	12.4
	36"	S	204	181	165	154	145	139	133	129
		G'	8.3	9.2	10.0	10.6	11.1	11.5	11.8	12.1
18 0.0474"	6"	S	768	740	720	706	695	686	679	673
		G'	15.7	17.5	19.0	20.2	21.2	22.1	22.9	23.5
	12"	S	498	467	446	430	419	410	403	397
		G'	15.1	16.8	18.1	19.2	20.1	20.8	21.5	22.0
	18"	S	385	354	332	317	306	297	290	284
		G'	14.8	16.3	17.5	18.4	19.2	19.8	20.4	20.9
	24"	S	329	297	276	261	249	241	234	228
		G'	14.5	15.9	16.9	17.8	18.5	19.0	19.5	19.9
	30"	S	295	263	242	227	216	207	200	194
		G'	14.3	15.5	16.5	17.3	17.9	18.4	18.8	19.1
	36"	S	272	241	219	204	193	184	177	171
		G'	14.1	15.3	16.2	16.8	17.4	17.8	18.1	18.4
16 0.0598"	6"	S	976	940	914	896	882	870	861	854
		G'	25.1	27.7	29.8	31.4	32.8	33.9	34.9	35.7
	12"	S	631	591	564	544	530	519	510	502
		G'	24.1	26.3	28.0	29.4	30.5	31.4	32.2	32.9
	18"	S	489	448	421	402	387	376	367	360
		G'	23.4	25.3	26.8	28.0	28.9	29.6	30.2	30.7
	24"	S	417	377	350	330	316	305	296	288
		G'	22.9	24.6	25.9	26.9	27.6	28.2	28.7	29.1
	30"	S	375	334	307	288	273	262	253	246
		G'	22.5	24.1	25.2	26.0	26.6	27.1	27.4	27.7
	36"	S	346	306	278	259	245	233	224	217
		G'	22.2	23.6	24.6	25.3	25.8	26.2	26.4	26.7

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
 SIDELAP CONNECTION: S/L Screws #10
 ATTACHMENT PATTERN: 24 J 6

S = Allowable Diaphragm Shear (lbs/ft)
 G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"
20 0.0358"	6"	S	672	640	619	604	593	584	576	569
		G'	8.9	10.2	11.2	12.0	12.8	13.4	14.0	14.5
	12"	S	416	384	363	348	336	328	320	315
		G'	8.8	9.9	10.9	11.7	12.3	12.9	13.4	13.9
	18"	S	331	299	278	262	251	242	235	229
		G'	8.6	9.7	10.6	11.4	12.0	12.5	13.0	13.4
	24"	S	288	256	235	220	208	199	192	187
		G'	8.5	9.6	10.4	11.1	11.7	12.2	12.6	13.0
	30"	S	262	231	209	194	183	174	167	161
		G'	8.5	9.5	10.3	10.9	11.5	11.9	12.3	12.6
	36"	S	245	213	192	177	166	157	150	144
		G'	8.4	9.4	10.2	10.8	11.3	11.7	12.0	12.3
18 0.0474"	6"	S	893	850	822	801	786	774	765	755
		G'	15.7	17.5	19.0	20.3	21.3	22.2	22.9	23.6
	12"	S	554	511	482	462	447	435	425	418
		G'	15.2	16.9	18.2	19.3	20.2	21.0	21.6	22.2
	18"	S	441	398	369	349	334	322	312	304
		G'	14.9	16.5	17.7	18.6	19.4	20.0	20.6	21.1
	24"	S	384	341	313	292	277	265	256	248
		G'	14.7	16.1	17.2	18.1	18.8	19.3	19.8	20.2
	30"	S	350	307	279	259	243	231	222	214
		G'	14.5	15.9	16.9	17.6	18.3	18.7	19.1	19.5
	36"	S	328	285	256	236	221	209	199	191
		G'	14.4	15.7	16.6	17.3	17.8	18.3	18.6	18.9
16 0.0598"	6"	S	1131	1076	1039	1013	993	978	966	956
		G'	25.2	27.8	29.9	31.5	32.9	34.0	35.0	35.8
	12"	S	703	648	611	585	566	550	538	528
		G'	24.4	26.6	28.4	29.7	30.9	31.8	32.5	33.2
	18"	S	560	505	469	442	423	408	395	385
		G'	23.8	25.8	27.3	28.5	29.4	30.2	30.8	31.3
	24"	S	489	434	397	371	352	336	324	314
		G'	23.4	25.3	26.6	27.6	28.4	28.9	29.4	29.8
	30"	S	446	391	354	328	309	293	281	271
		G'	23.1	24.8	26.0	26.9	27.5	28.0	28.4	28.7
	36"	S	417	362	326	300	280	265	253	243
		G'	22.9	24.5	25.6	26.3	26.9	27.3	27.5	27.7

NOTES: The nominal shear values, S_n, have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values, S, for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: φ = .55 for LRFD and Ω = 3.00 for ASD for welds.
Wind: φ = .70 for LRFD and Ω = 2.35 for ASD for welds.
Other: φ = .60 for LRFD and Ω = 2.65 for ASD for welds.
 Calculations are based on a "Single Span Condition". For "Other Span Conditions" contact the Metal Dek Group for additional information.
 F_y = 40 ksi and F_u = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.

Versa-Dek® 3.5 LS Acoustical			Metal Dek Group®							
Allowable Diaphragm Shear Values, S (plf) and Stiffness Factors, G' (kpi)			a unit of CSI®							
SUPPORT CONNECTION: Hilti X-ENP-19-L15			S = Allowable Diaphragm Shear (lbs/ft)							
SIDELAP CONNECTION: S/L Screws #10			G' = Stiffness Factor (kips/in.)							
ATTACHMENT PATTERN: 24 J 3										
GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"
20 0.0358"	6"	S	533	523	516	511	507	504	501	499
		G'	8.9	10.1	11.2	12.0	12.8	13.4	14.0	14.5
	12"	S	384	366	353	344	337	332	327	323
		G'	8.7	9.9	10.8	11.6	12.3	12.9	13.4	13.8
	18"	S	305	285	272	262	255	250	245	242
		G'	8.6	9.7	10.5	11.3	11.9	12.4	12.9	13.3
	24"	S	254	234	221	211	204	199	194	190
		G'	8.5	9.5	10.3	11.0	11.6	12.0	12.5	12.8
	30"	S	223	203	190	180	173	168	163	160
		G'	8.4	9.3	10.1	10.8	11.3	11.7	12.1	12.4
	36"	S	203	183	169	160	153	147	143	139
		G'	8.3	9.2	10.0	10.6	11.1	11.5	11.8	12.1
18 0.0474"	6"	S	701	688	679	672	667	663	660	657
		G'	15.7	17.5	19.0	20.2	21.2	22.1	22.9	23.5
	12"	S	505	482	465	454	444	437	432	427
		G'	15.1	16.8	18.1	19.2	20.1	20.8	21.5	22.0
	18"	S	403	377	359	347	337	330	324	319
		G'	14.8	16.3	17.5	18.4	19.2	19.8	20.4	20.8
	24"	S	335	309	291	279	270	262	256	252
		G'	14.5	15.9	16.9	17.8	18.4	19.0	19.5	19.9
	30"	S	294	268	251	238	229	222	216	211
		G'	14.2	15.5	16.5	17.2	17.8	18.3	18.7	19.1
	36"	S	267	241	224	211	202	194	189	184
		G'	14.0	15.2	16.1	16.8	17.3	17.8	18.1	18.4
16 0.0598"	6"	S	877	861	850	842	836	831	827	824
		G'	25.1	27.6	29.7	31.3	32.7	33.8	34.8	35.7
	12"	S	634	605	584	570	558	549	542	536
		G'	23.9	26.1	27.8	29.2	30.3	31.2	32.0	32.7
	18"	S	507	474	452	437	425	416	408	402
		G'	23.0	25.0	26.4	27.6	28.5	29.2	29.8	30.4
	24"	S	421	388	367	351	339	330	323	317
		G'	22.4	24.1	25.4	26.3	27.1	27.7	28.1	28.5
	30"	S	370	337	315	300	288	279	272	266
		G'	21.9	23.4	24.5	25.3	25.9	26.4	26.8	27.1
	36"	S	336	303	281	265	254	245	237	231
		G'	21.5	22.9	23.8	24.5	25.0	25.4	25.6	25.9

SUPPORT CONNECTION: Hilti X-ENP-19-L15			S = Allowable Diaphragm Shear (lbs/ft)							
SIDELAP CONNECTION: S/L Screws #10			G' = Stiffness Factor (kips/in.)							
ATTACHMENT PATTERN: 24 J 6										
GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"
20 0.0358"	6"	S	634	608	590	578	569	561	555	551
		G'	8.9	10.2	11.2	12.0	12.8	13.4	14.0	14.5
	12"	S	437	411	394	382	372	365	359	355
		G'	8.8	9.9	10.9	11.7	12.3	12.9	13.4	13.9
	18"	S	334	308	291	279	270	263	257	252
		G'	8.6	9.7	10.6	11.4	12.0	12.5	13.0	13.4
	24"	S	283	257	240	228	219	211	206	201
		G'	8.5	9.6	10.4	11.1	11.7	12.2	12.6	13.0
	30"	S	252	227	209	197	188	181	175	170
		G'	8.5	9.5	10.3	10.9	11.5	11.9	12.3	12.6
	36"	S	232	206	189	177	167	160	154	150
		G'	8.4	9.4	10.2	10.8	11.3	11.7	12.0	12.3
18 0.0474"	6"	S	829	795	772	756	744	734	726	720
		G'	15.7	17.5	19.0	20.3	21.3	22.2	22.9	23.6
	12"	S	577	543	520	504	492	483	475	469
		G'	15.2	16.9	18.2	19.3	20.2	20.9	21.6	22.1
	18"	S	441	407	385	368	356	347	340	333
		G'	14.9	16.4	17.6	18.6	19.4	20.0	20.6	21.0
	24"	S	373	339	317	301	289	279	272	266
		G'	14.7	16.1	17.2	18.0	18.7	19.3	19.8	20.2
	30"	S	332	299	276	260	248	238	231	225
		G'	14.5	15.8	16.8	17.6	18.2	18.7	19.1	19.4
	36"	S	305	271	249	233	221	211	204	198
		G'	14.4	15.6	16.5	17.2	17.8	18.2	18.6	18.8
16 0.0598"	6"	S	1032	990	961	941	926	914	904	897
		G'	25.1	27.7	29.8	31.4	32.8	33.9	34.9	35.7
	12"	S	725	683	655	635	620	608	599	591
		G'	24.1	26.3	28.1	29.4	30.5	31.4	32.2	32.9
	18"	S	554	512	484	464	449	437	427	420
		G'	23.4	25.4	26.8	28.0	28.9	29.6	30.2	30.7
	24"	S	469	426	398	378	363	351	342	334
		G'	22.9	24.6	25.9	26.9	27.6	28.2	28.7	29.1
	30"	S	417	375	347	327	312	300	290	283
		G'	22.5	24.1	25.2	26.0	26.6	27.1	27.5	27.8
	36"	S	383	341	313	292	277	266	256	249
		G'	22.2	23.6	24.6	25.3	25.8	26.2	26.5	26.7

NOTES: The nominal shear values, S_n , have been divided by a Safety Factor of 2.50 to obtain (ASD) Diaphragm Shear values, S, for seismic loading (worst case).

The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.

Seismic: $\phi = .65$ for LRFD and $\Omega = 2.50$ for ASD for mechanical fasteners.

Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for mechanical fasteners.

Other: $\phi = .65$ for LRFD and $\Omega = 2.50$ for ASD for mechanical fasteners.

Calculations are based on a "Single Span Condition". For "Other Span Conditions" contact the Metal Dek Group for additional information.

$F_y = 40$ ksi and $F_u = 55$ ksi

* Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.