

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



SUPPORT CONNECTION: 1/2" Effective Weld Diameter
 SIDELAP CONNECTION: 1-1/2" Seam Welds
 ATTACHMENT PATTERN: 24.5 / 4

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

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"	13' - 0"	14' - 0"
22 0.0295"	6"	S	1072	1049	1032	1018	909*	764*	651*	562*
		G'	36.8	40.5	43.9	47.1	50.1	52.9	55.5	58.0
	12"	S	856	830	809	792	777	764*	651*	562*
		G'	35.3	38.6	41.6	44.4	47.0	49.4	51.6	53.6
	18"	S	697	666	642	622	606	592	580	562*
		G'	34.2	37.2	39.9	42.4	44.6	46.7	48.6	50.3
	24"	S	608	575	550	528	511	496	484	473
		G'	33.4	36.2	38.6	40.8	42.8	44.6	46.3	47.7
	30"	S	552	518	491	470	452	437	424	413
		G'	32.8	35.3	37.6	39.6	41.4	43.0	44.4	45.7
	36"	S	514	479	452	430	411	396	383	372
		G'	32.2	34.7	36.7	38.6	40.2	41.6	42.9	44.0
20 0.0358"	6"	S	1314	1286	1264	1247	1214*	1020*	869*	750*
		G'	54.5	59.4	63.9	68.0	71.8	75.4	78.6	81.6
	12"	S	1049	1017	991	970	952	938	869*	750*
		G'	51.5	55.8	59.6	63.0	66.1	68.9	71.5	73.9
	18"	S	854	816	786	762	742	725	710	698
		G'	49.5	53.2	56.5	59.4	62.0	64.3	66.4	68.3
	24"	S	745	705	673	647	626	608	593	580
		G'	47.9	51.3	54.1	56.6	58.8	60.8	62.5	64.0
	30"	S	676	635	602	575	553	535	519	506
		G'	46.7	49.7	52.3	54.5	56.4	58.0	59.4	60.7
	36"	S	629	587	553	526	504	485	469	455
		G'	45.8	48.5	50.8	52.7	54.4	55.8	57.0	58.0
18 0.0474"	6"	S	1769	1732	1703	1680	1660	1551*	1321*	1139*
		G'	92.6	99.5	105.6	111.0	115.9	120.3	124.3	128.0
	12"	S	1413	1369	1335	1306	1283	1263	1246	1139*
		G'	85.4	90.9	95.6	99.7	103.3	106.6	109.4	112.0
	18"	S	1150	1099	1059	1026	997	977	957	940
		G'	80.6	85.0	88.9	92.0	94.7	97.1	99.2	101.1
	24"	S	1004	950	907	872	843	819	799	781
		G'	77.1	80.8	83.8	86.3	88.4	90.2	91.8	93.1
	30"	S	911	855	811	775	745	721	699	681
		G'	74.4	77.5	80.0	82.0	83.6	85.0	86.1	87.1
	36"	S	848	791	745	709	679	653	632	613
		G'	72.3	75.0	77.0	78.6	79.9	80.9	81.7	82.3
16 0.0598"	6"	S	2273	2225	2188	2158	2133	2113	1868*	1611*
		G'	138.1	146.4	153.6	159.8	166.3	170.2	174.6	178.5
	12"	S	1815	1759	1715	1678	1648	1623	1601	1582
		G'	124.2	130.2	135.3	139.5	143.2	146.4	149.2	151.7
	18"	S	1478	1412	1361	1319	1284	1255	1230	1208
		G'	115.3	119.7	123.3	126.3	128.7	130.8	132.6	134.2
	24"	S	1289	1220	1165	1120	1083	1052	1026	1003
		G'	108.9	112.3	114.9	116.9	118.5	119.9	121.0	121.9
	30"	S	1171	1099	1042	996	958	926	898	875
		G'	104.3	106.8	108.6	110.0	111.0	111.7	112.3	112.8
	36"	S	1089	1016	958	911	872	839	811	788
		G'	100.7	102.5	103.8	104.6	105.1	105.4	105.6	105.7

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
 SIDELAP CONNECTION: 1-1/2" Seam Welds
 ATTACHMENT PATTERN: 24.5 / 8

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

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"	13' - 0"	14' - 0"
22 0.0295"	6"	S	1272	1224	1187	1100*	909*	764*	651*	562*
		G'	36.9	40.6	44.0	47.2	50.2	53.1	55.7	58.1
	12"	S	1043	997	960	930	906	764*	651*	562*
		G'	35.6	38.9	42.0	44.8	47.4	49.8	52.0	54.1
	18"	S	845	796	757	727	701	680	651*	562*
		G'	34.7	37.7	40.5	43.0	45.3	47.4	49.3	51.1
	24"	S	742	692	653	622	596	574	556	540
		G'	34.0	36.9	39.4	41.7	43.7	45.6	47.3	48.8
	30"	S	679	629	589	558	532	510	491	475
		G'	33.5	36.2	38.6	40.7	42.5	44.2	45.7	47.0
	36"	S	637	586	547	515	489	467	448	432
		G'	33.1	35.7	37.9	39.8	41.6	43.0	44.4	45.6
20 0.0358"	6"	S	1558	1500	1454	1418	1214*	1020*	869*	750*
		G'	54.7	59.6	64.2	68.3	72.1	75.8	78.9	81.9
	12"	S	1278	1221	1176	1140	1110	1020*	869*	750*
		G'	52.1	56.4	60.2	63.7	66.9	69.7	72.3	74.6
	18"	S	1035	975	928	890	859	833	811	750*
		G'	50.4	54.2	57.5	60.5	63.1	65.5	67.6	69.5
	24"	S	909	848	800	761	730	703	681	662
		G'	49.1	52.6	55.5	58.1	60.4	62.4	64.2	65.8
	30"	S	832	770	722	683	651	625	602	582
		G'	48.2	51.3	54.0	56.3	58.3	60.0	61.5	62.8
	36"	S	780	718	670	631	598	572	549	529
		G'	47.4	50.4	52.8	54.9	56.6	58.1	59.4	60.5
18 0.0474"	6"	S	2099	2021	1959	1910	1845*	1551*	1321*	1139*
		G'	93.1	100.0	106.1	111.6	116.5	120.9	124.9	128.6
	12"	S	1721	1645	1584	1536	1496	1462	1321*	1139*
		G'	86.7	92.3	97.0	101.2	104.9	108.1	111.0	113.6
	18"	S	1394	1313	1250	1199	1157	1122	1093	1067
		G'	82.6	87.2	91.0	94.3	97.1	99.5	101.6	103.5
	24"	S	1224	1142	1078	1026	983	948	917	891
		G'	79.7	83.6	86.8	89.4	91.6	93.4	95.0	96.3
	30"	S	1121	1038	973	920	877	841	811	785
		G'	77.6	81.0	83.6	85.7	87.4	88.8	90.0	90.9
	36"	S	1051	968	902	849	806	770	739	713
		G'	75.9	78.9	81.1	82.9	84.2	85.3	86.7	86.7
16 0.0598"	6"	S	2697	2596	2517	2454	2403	2192*	1868*	1611*
		G'	139.1	147.4	154.6	160.9	166.4	171.3	175.6	179.5
	12"	S	2212	2113	2035	1973	1921	1878	1842	1611*
		G'	126.7	132.8	137.9	142.1	145.8	149.0	151.8	154.2
	18"	S	1791	1687	1606	1541	1487	1442	1404	1371
		G'	119.0	123.6	127.3	130.2	132.7	134.8	136.5	138.0
	24"	S	1573	1467	1384	1318	1263	1217	1178	1145
		G'	113.7	117.2	119.9	122.0	123.6	124.9	125.9	126.8
	30"	S	1440	1333	1250	1182	1127	1081	1042	1008
		G'	109.9	112.6	114.6	116.0	117.0	117.7	118.2	118.5
	36"	S	1351	1243	1159	1091	1036	989	950	916
		G'	107.0	109.1	110.5	111.4	111.9	112.1	112.2	112.2

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: Phi = .55 for LRFD and SF = 3.00 for ASD for welds.
Wind: Phi = .70 for LRFD and SF = 2.35 for ASD for welds.
Other: Phi = .60 for LRFD and SF = 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.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.

Versa-Dek® S
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: 24.5 / 4

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

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C TO C SUPPORT							
			7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"	13' - 0"	14' - 0"
22 0.0295"	6"	S	627	602	582	565	552	540	531	522
		G'	34.5	37.7	40.5	43.2	45.6	47.8	49.9	51.8
	12"	S	446	417	395	377	362	350	339	330
		G'	32.2	34.8	37.0	39.0	40.8	42.3	43.8	45.1
	18"	S	381	352	329	311	296	283	272	263
		G'	30.8	33.0	34.8	36.4	37.7	38.9	40.0	40.9
	24"	S	348	319	296	277	262	249	238	229
		G'	29.9	31.7	33.3	34.6	35.6	36.6	37.3	38.0
	30"	S	328	299	275	257	241	228	218	208
		G'	29.2	30.8	32.2	33.2	34.1	34.8	35.4	35.9
	36"	S	315	285	262	243	228	215	204	194
		G'	28.7	30.2	31.3	32.3	33.0	33.5	34.0	34.3
20 0.0358"	6"	S	764	733	708	688	671	658	646	635
		G'	50.1	54.1	57.6	60.8	63.6	66.2	68.6	70.7
	12"	S	544	509	481	459	441	426	413	402
		G'	45.8	48.7	51.2	53.4	55.3	57.0	58.4	59.7
	18"	S	465	429	401	379	360	345	332	320
		G'	43.3	45.6	47.4	49.0	50.3	51.4	52.4	53.2
	24"	S	425	389	361	338	319	304	290	279
		G'	41.6	43.5	44.9	46.1	47.0	47.7	48.3	48.8
	30"	S	401	365	336	313	294	279	265	254
		G'	40.4	41.9	43.1	44.0	44.6	45.1	45.5	45.7
	36"	S	385	348	320	297	278	262	249	237
		G'	39.5	40.8	41.8	42.4	42.8	43.1	43.3	43.4
18 0.0474"	6"	S	1019	977	943	916	894	875	859	845
		G'	82.0	86.9	91.2	94.9	98.1	101.0	103.5	105.8
	12"	S	726	679	642	613	588	568	550	535
		G'	72.3	75.4	77.9	80.0	81.7	83.1	84.3	85.4
	18"	S	622	574	536	506	481	460	442	427
		G'	66.9	68.9	70.4	71.6	72.4	73.1	73.6	74.0
	24"	S	569	520	482	452	427	405	388	370
		G'	63.5	64.8	65.7	66.2	66.5	66.7	66.8	66.8
	30"	S	537	488	450	419	394	372	354	339
		G'	61.1	61.9	62.4	62.5	62.5	62.3	62.1	61.8
	36"	S	516	466	428	397	372	350	332	317
		G'	59.3	59.8	59.9	59.8	59.4	59.1	58.6	58.1
16 0.0598"	6"	S	1295	1241	1198	1163	1134	1110	1089	1072
		G'	117.9	123.1	127.5	131.2	134.4	137.1	139.5	141.7
	12"	S	924	864	817	779	748	721	699	680
		G'	100.7	103.2	105.2	106.7	107.9	108.8	109.6	110.2
	18"	S	793	731	683	644	612	585	563	543
		G'	91.5	92.6	93.3	93.7	93.8	93.9	93.8	93.7
	24"	S	726	664	615	576	543	516	493	474
		G'	85.8	86.1	85.9	85.6	85.1	84.6	84.1	83.5
	30"	S	686	623	574	534	502	475	452	432
		G'	82.0	81.6	80.9	80.1	79.2	78.3	77.5	76.6
	36"	S	659	596	546	507	474	447	424	404
		G'	79.2	78.3	77.3	76.1	74.9	73.8	72.7	71.6

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
 SIDELAP CONNECTION: S/L Screws #10
 ATTACHMENT PATTERN: 24.5 / 8

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

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C TO C SUPPORT							
			7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"	13' - 0"	14' - 0"
22 0.0295"	6"	S	764	722	689	662	641	622	607	562*
		G'	34.9	38.1	41.0	43.7	46.1	48.4	50.5	52.4
	12"	S	564	520	487	459	437	418	403	389
		G'	33.1	35.8	38.1	40.2	42.0	43.7	45.1	46.5
	18"	S	496	452	418	391	368	349	333	320
		G'	32.1	34.4	36.4	38.1	39.6	40.8	42.0	42.9
	24"	S	462	418	384	356	333	315	299	285
		G'	31.4	33.5	35.3	36.7	37.9	39.0	39.8	40.6
	30"	S	441	397	363	335	313	294	278	264
		G'	31.0	32.9	34.5	35.7	36.8	37.6	38.3	38.9
	36"	S	427	383	349	321	299	280	264	250
		G'	30.6	32.4	33.9	35.0	35.9	36.6	37.2	37.6
20 0.0358"	6"	S	930	879	839	806	780	758	739	723
		G'	80.9	84.9	88.5	91.7	94.6	97.2	99.6	101.8
	12"	S	688	635	593	560	533	510	491	474
		G'	47.4	50.5	53.2	55.5	57.4	59.2	60.7	62.0
	18"	S	606	552	510	477	449	426	407	390
		G'	45.5	48.1	50.2	51.9	53.3	54.5	55.5	56.4
	24"	S	564	510	468	435	407	384	364	348
		G'	44.3	46.5	48.3	49.8	50.7	51.5	52.2	52.7
	30"	S	539	485	443	409	382	359	339	322
		G'	43.5	45.4	46.9	48.0	48.8	49.4	49.8	50.1
	36"	S	522	468	426	393	365	342	322	305
		G'	42.9	44.6	45.9	46.8	47.4	47.8	48.1	48.2
18 0.0474"	6"	S	1242	1172	1118	1074	1039	1009	983	962
		G'	83.8	88.8	93.2	96.9	100.1	103.0	105.6	107.8
	12"	S	920	849	793	748	711	681	654	632
		G'	75.9	79.2	81.9	84.0	85.7	87.2	88.4	89.4
	18"	S	811	739	683	637	600	569	543	521
		G'	71.8	74.1	75.8	77.0	77.9	78.6	79.1	79.5
	24"	S	756	684	627	582	545	514	487	465
		G'	69.2	70.9	72.0	72.7	73.1	73.3	73.3	73.2
	30"	S	723	650	594	548	511	480	454	431
		G'	67.4	68.7	69.4	69.7	69.7	69.6	69.3	69.0
	36"	S	701	628	572	526	489	458	431	409
		G'	66.2	67.1	67.5	67.5	67.3	66.9	66.4	65.8
16 0.0598"	6"	S	1579	1490	1421	1365	1319	1280	1248	1220
		G'	121.2	126.6	131.0	134.7	137.8	140.5	142.8	144.9
	12"	S	1174	1082	1010	953	905	866	832	804
		G'	107.0	109.7	111.7	113.1	114.3	115.1	115.7	116.2
	18"	S	1036	943	871	813	765	726	692	663
		G'	99.7	101.0	101.8	102.1	102.1	102.0	101.8	101.5
	24"	S	966	873	801	743	695	655	622	593
		G'	95.3	95.8	95.7	95.3	94.8	94.1	93.3	92.5
	30"	S	925	831	759	701	653	613	579	550
		G'	92.3	92.3	91.7	90.8	89.8	88.7	87.6	86.5
	36"	S	897	803	731	672	625	585	551	522
		G'	90.2	89.7	88.8	87.6	86.2	84.9	83.5	82.2

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: Phi = .55 for LRFD and SF = 3.00 for ASD for welds.
Wind: Phi = .70 for LRFD and SF = 2.35 for ASD for welds.
Other: Phi = .60 for LRFD and SF = 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.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.