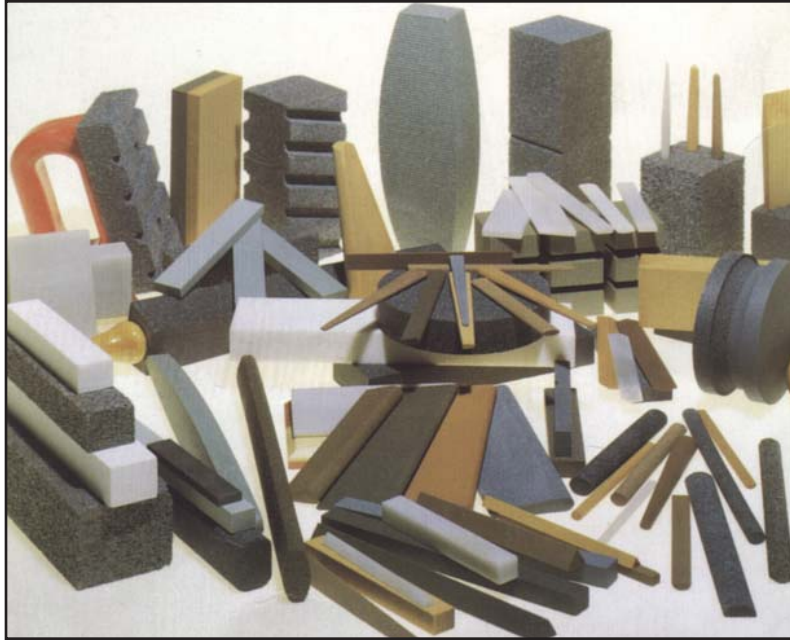




# MODERN ABRASIVE CORP.

Catalog No. FL1

Spring 2002



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# MAXIMUM OPERATING SPEEDS (RPM) FOR MOUNTED POINTS\*

## CONDENSED OPERATING RULES FOR MOUNTED POINTS

Despite their small size, Mounted Wheels should be used with all of the safety precautions recommended for other types of abrasive grinding wheels. Each wheel should be inspected before use to make sure that the mandrel has not been bent or the wheel damaged. When mounting, the mandrel should be inserted into the collet as far as possible. The pressure exerted in the grinding operation should not be excessive.

Mounted Wheels should be operated with adequate speed to get efficient grinding action. The factors that affect the maximum safe operating speed of a particular size wheel include:

- 1) the size and shape of the wheel
- 2) the overhang (distance that the wheel is extended from the collet)
- 3) the diameter of the mandrel on which the wheel is mounted
- 4) the condition of the grinder and its collet

Refer to these tables and/or the American Safety code for maximum operating speeds. (ANSI B7.1) DO NOT EXCEED THE SPEED INDICATED!

The use of abrasive wheels can cause nuisance dust. Take normal precautions to avoid exposure. WEAR FACE PROTECTION AT ALL TIMES!

It is a good practice when holding hand grinders to hold the grinder down and away from the operator until full operating speed is attained and it is determined that the mounted wheel is properly mounted and running smoothly. DO NOT OPERATE A MOUNTED WHEEL WHICH IS NOT PROPERLY MOUNTED AND RUNNING TRUE! If excessive vibration is felt, stop the grinder at once and do not resume grinding until the cause is found and corrected.

### MAXIMUM OPERATING SPEEDS (RPM) FOR 1/4" MANDRELS GROUP "A" AND (SELECTED) GROUP "B" SHAPES

SHAPE NO.	WHEEL SIZE DIAM. X THK.	OVERHANG			
		1/2" OVERHANG & THREADED MANDRELS	1"	1-1/2"	2"
A1	3/4 x 2-1/2	19800	16500	13120	10650
A2	1 x 1-1/4	38200	32620	25500	20620
A3	1 x 2-3/4	16100	13080	10730	8720
A4	1-1/4 x 1-1/4	30560	24750	20250	16120
A5	3/4 x 1-1/8	45000	33750	27000	21000
A6	3/4 x 1-1/8	39000	29700	24000	18970
A11	7/8 x 2	19860	15100	12000	9810
A12	11/16 x 1-1/4	48000	35250	27370	21750
A13	1-1/8 x 1-1/8	33950	32250	25500	20620
A14	11/16 x 7/8	55560	40500	30750	24370
A15	1/4 x 1-1/16	72750	47620	34500	26250
A21	1 x 1	34500	26250	21000	17250
A22	3/4 x 5/8	50930	40500	30750	24370
A23	3/4 x 1	39370	30370	24370	19500
A24	1/4 x 3/4	76500	49500	36370	27000
A25	1 x 1	35620	27370	22120	18000
A26	5/8 x 5/8	61120	46500	35250	27750
A31	1-3/8 x 1	27780	26250	21000	17250
A32	1 x 5/8	38200	38200	30000	24000
A33	1 x 1/2	38200	38200	30000	24000
A34	1-1/2 x 3/8	25470	25470	25470	21970
A35	1 x 3/8	38200	38200	31500	25500
A36	1-5/8 x 3/8	23520	23520	23520	21750
A37	1-1/4 x 1/4	30560	30560	30560	28120
A38	1 x 1	34500	26250	21000	17020
A39	3/4 x 3/4	47250	35250	27750	22120
A40	3/4 x 3/4	47250	35250	27750	22120
B41	5/8 x 5/8	61120	46500	35250	27370
B42	1/2 x 3/4	61120	46500	35250	27370
B51	7/16 x 3/4	81000	54370	42000	33000
B52	3/8 x 3/4	81000	54370	42000	33000
B61	3/4 x 5/16	50930	50930	38100	29020
B62	1/2 x 3/8	71250	47620	35020	27000
B91	1/2 x 5/8	61500	42000	31500	24000
B101	5/8 x 11/16	61120	46500	35250	27370
B102	5/8 x 1/2	61120	54370	42000	33000
B111	7/16 x 11/16	66000	46500	35250	27370
B112	3/8 x 1/2	81000	54370	42000	33000
B121	1/2 x 1/2	76390	54370	42000	33000
B131	1/2 x 1/2	61500	42000	31500	24000
B132	3/8 x 1/2	81000	54370	42000	33000

### MAXIMUM OPERATING SPEEDS (RPM) FOR 1/4" MANDRELS GROUP "W" (PLAIN SHAPES)

SHAPE NO.	WHEEL SIZE DIAM. X THK.	OVERHANG			
		1/2" OVERHANG & THREADED MANDRELS	1"	1-1/2"	2"
W170	3/8 x 1/2	81000	54370	42000	33000
W175	3/8 x 3/8	71250	47620	35020	27000
W176	3/8 x 1/2	81000	54370	42000	33000
W177	3/8 x 3/4	66000	46500	32250	27370
W178	3/8 x 1	55200	40500	30000	23250
W179	3/8 x 1-1/4	45750	33750	25720	19720
W183	1/2 x 1/4	76390	54750	40500	31120
W184	1/2 x 3/8	71250	47620	35020	27000
W185	1/2 x 1/2	61500	42000	31500	24000
W186	1/2 x 3/4	51000	36370	27750	21220
W187	1/2 x 1	40500	30000	24000	18750
W188	1/2 x 1-1/2	30370	24000	18900	15000
W189	1/2 x 2	24000	18750	15000	12150
W192	5/8 x 1/4	61120	51750	38400	29770
W193	5/8 x 3/8	61120	45000	33370	25870
W194	5/8 x 1/2	56400	39750	29400	22720
W195	5/8 x 3/4	46500	32400	24900	19720
W196	5/8 x 1	35250	27000	21300	16870
W197	5/8 x 2	21000	16500	12900	10870
W198	5/8 x 2-1/2	16500	12900	10870	8700
W201	3/4 x 1/4	50930	50930	38100	29020
W202	3/4 x 3/8	50930	44100	32400	25120
W203	3/4 x 1/2	50930	36370	27750	21750
W204	3/4 x 3/4	42750	30750	23250	18000
W205	3/4 x 1	34500	25870	19500	15000
W206	3/4 x 1-1/4	28720	21520	17020	13500
W207	3/4 x 1-1/2	24000	18520	14620	12000
W208	3/4 x 2	18750	15370	12000	9900
W209	3/4 x 2-1/2	15000	12150	10500	8400
W211	7/8 x 1/8	43650	43650	42900	33000
W212	7/8 x 1/4	43650	43650	35100	27600
W213	7/8 x 3/8	43650	40870	29400	23400
W214	15/16 x 1/4	38200	38200	33750	26250
W215	1 x 1/8	38200	38200	38200	33750
W216	1 x 1/4	38200	38200	33750	26250
W217	1 x 3/8	38200	38200	28500	22500
W218	1 x 1/2	38200	32770	24900	19500
W219	1 x 3/4	35100	24520	18750	15000
W220	1 x 1	25500	19120	15750	12370
W221	1 x 1-1/2	19120	14620	12000	10500
W222	1 x 2	15900	12370	9750	8620
W223	1 x 2-1/2	12370	9900	8620	6900
W224	1 x 3	12940	6600	5050	4700
W225	1-1/4 x 1/4	30560	30560	30560	24000
W226	1-1/4 x 3/8	30560	30560	26250	20100
W227	1-1/4 x 1/2	30560	29620	22650	18000
W228	1-1/4 x 3/4	30520	22500	17850	14250
W229	1-1/4 x 1	24000	18750	15370	12000
W230	1-1/4 x 1-1/4	20400	15900	12750	10500
W231	1-1/4 x 1-1/2	17620	13500	10650	9000
W232	1-1/4 x 2	14250	10650	9000	7500
W235	1-1/2 x 1/4	25470	25470	25470	22720
W236	1-1/2 x 1/2	25470	25470	21750	17250
W237	1-1/2 x 1	22500	17620	13270	10870
W238	1-1/2 x 1-1/2	15600	12000	9750	8250
W239	1-1/2 x 2	12750	9900	8000	6400
W241	1-1/2 x 3	12750	6600	5050	4700
W242	2 x 1	19100	15950	11750	10000
W243	2 x 1-1/2	14500	12750	9800	7800
W244	2 x 2	11750	10500	7500	6200

### MAXIMUM OPERATING SPEEDS (RPM) FOR 3/8" MANDRELS GROUP "W" (SELECTED LARGER PLAIN SHAPES)

W223	1 x 2-1/2	24740	19800	17240	13800
W231	1-1/4 x 1-1/2	30560	27000	21300	18000
W232	1-1/4 x 2	28500	21300	18000	15000
W238	1-1/2 x 1-1/2	25470	24000	19500	16500
W239	1-1/2 x 2	25470	19800	16000	12800
W240	1-1/2 x 2-1/2	21000	16800	13600	11000
W241	1-1/2 x 3	18000	14500	12000	9600
W242	2 x 1	19100	19100	19100	19100
W243	2 x 1-1/2	19100	19100	19100	15600
W244	2 x 2	19100	19100	15000	12400
W245	2 x 2-1/2	19100	14500	12800	10600
W246	2 x 3	16500	13500	11200	9200

\*Reprinted in part, courtesy of the Grinding Wheel Institute

## MAXIMUM OPERATING SPEEDS (RPM) FOR MOUNTED POINTS (CONTINUED)\*

**MAXIMUM OPERATING SPEEDS (RPM) FOR 1/8" MANDRELS  
GROUP "B" SHAPES**

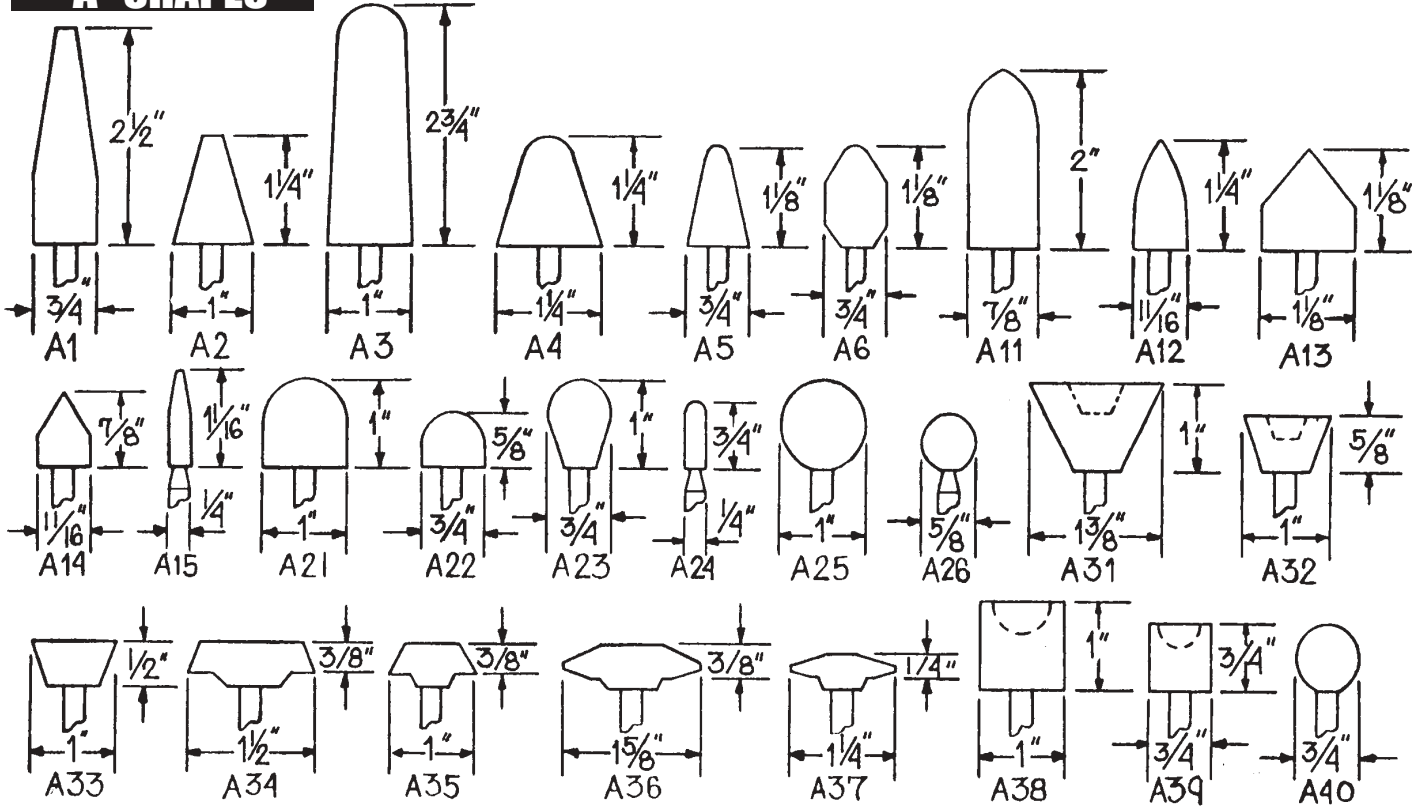
SHAPE NO.	WHEEL SIZE DIAM. X THK.	OVERHANG			
		1/2" & THREADED MANDRELS	1"	1-1/2"	2"
B41	5/8 x 5/8	33750	23250	17620	13650
B42	1/2 x 3/4	33750	23250	17620	13650
B43	1/4 x 5/16	81370	51000	34120	24000
B44	7/32 x 3/8	68400	42370	28870	20850
B45	3/16 x 5/16	104250	61870	44620	30900
B46	1/8 x 5/16	105000	64500	46650	32400
B47	1/8 x 5/32	105000	64500	46650	32400
B51	7/16 x 3/4	45370	28500	21000	15900
B52	3/8 x 3/4	45370	28500	21000	15900
B53	1/4 x 5/8	60000	38020	26250	18750
B54	1/4 x 1/2	60000	38020	26250	18750
B55	1/8 x 1/4	105000	64500	46650	32400
B61	3/4 x 5/16	38250	24370	17400	13270
B62	1/2 x 3/8	41020	26400	19500	15000
B63	1/4 x 3/16	92400	57370	39370	27900
B64	1/4 x 1/16	105000	64500	46650	32400
B65	1/8 x 1/8	105000	64500	46650	32400
B70	3/4 x 1/8	50930	41250	27750	20400
B71	5/8 x 1/8	61120	48000	31500	22650
B72	1/2 x 1/8	73500	43650	29100	20770
B73	1/2 x 1/8	73500	43650	29100	20770
B74	7/32 x 3/32	105000	64500	46650	32400
B81	3/4 x 3/16	50930	41250	27750	20400
B82	1/2 x 1/4	76390	51000	34120	24000
B83	3/8 x 3/16	87600	53250	35250	24750
B84	5/16 x 3/16	105000	64500	46650	32400
B90	1/2 x 1/2	34500	22500	16870	13120
B91	1/2 x 5/8	34500	22500	16870	13120
B92	1/4 x 1/4	81370	51000	34120	24000
B93	3/16 x 3/16	105000	64500	46650	32400
B94	11/64 x 3/32	105000	64500	46650	32400
B95	1/8 x 3/16	105000	64500	46650	32400
B96	1/8 x 1/4	105000	64500	46650	32400
B97	1/8 x 3/8	105000	64500	46650	32400
B98	3/32 x 1/4	105000	64500	46650	32400
B101	5/8 x 11/16	33750	23250	17620	13650
B102	5/8 x 1/2	45370	28500	21000	15900
B103	5/8 x 1/4	61120	41250	27750	20400
B104	5/16 x 3/8	68400	42370	28870	20850
B105	1/4 x 1/4	104250	61870	44620	30900
B106	1/8 x 7/64	105000	64500	46650	32400
B111	7/16 x 11/16	33750	23250	17620	13650
B112	3/8 x 1/2	45370	28500	21000	15900
B113	1/4 x 1/4	81370	51000	34120	24000
B114	7/32 x 3/8	68400	42370	28870	20850
B115	3/32 x 1/8	105000	64500	46650	32400
B121	1/2 x 1/2	45370	28500	21000	15900
B122	3/8 x 3/8	61650	37720	27000	19870
B123	3/16 x 3/16	104250	61820	44620	30900
B124	1/8 x 1/8	105000	64500	46650	32400
B125	1/4 x 1/4	61650	37720	27000	19870
B131	1/2 x 1/2	34500	22500	16870	13120
B132	3/8 x 1/2	45370	28500	21000	15900
B133	3/8 x 3/8	54000	33000	24150	18000
B134	5/16 x 3/8	61650	37720	27000	19870
B135	1/4 x 1/2	60000	38020	26250	18750
B136	1/4 x 5/16	77250	45920	30900	22500

**MAXIMUM OPERATING SPEEDS (RPM) FOR 1/8" MANDRELS  
GROUP "W" SHAPES**

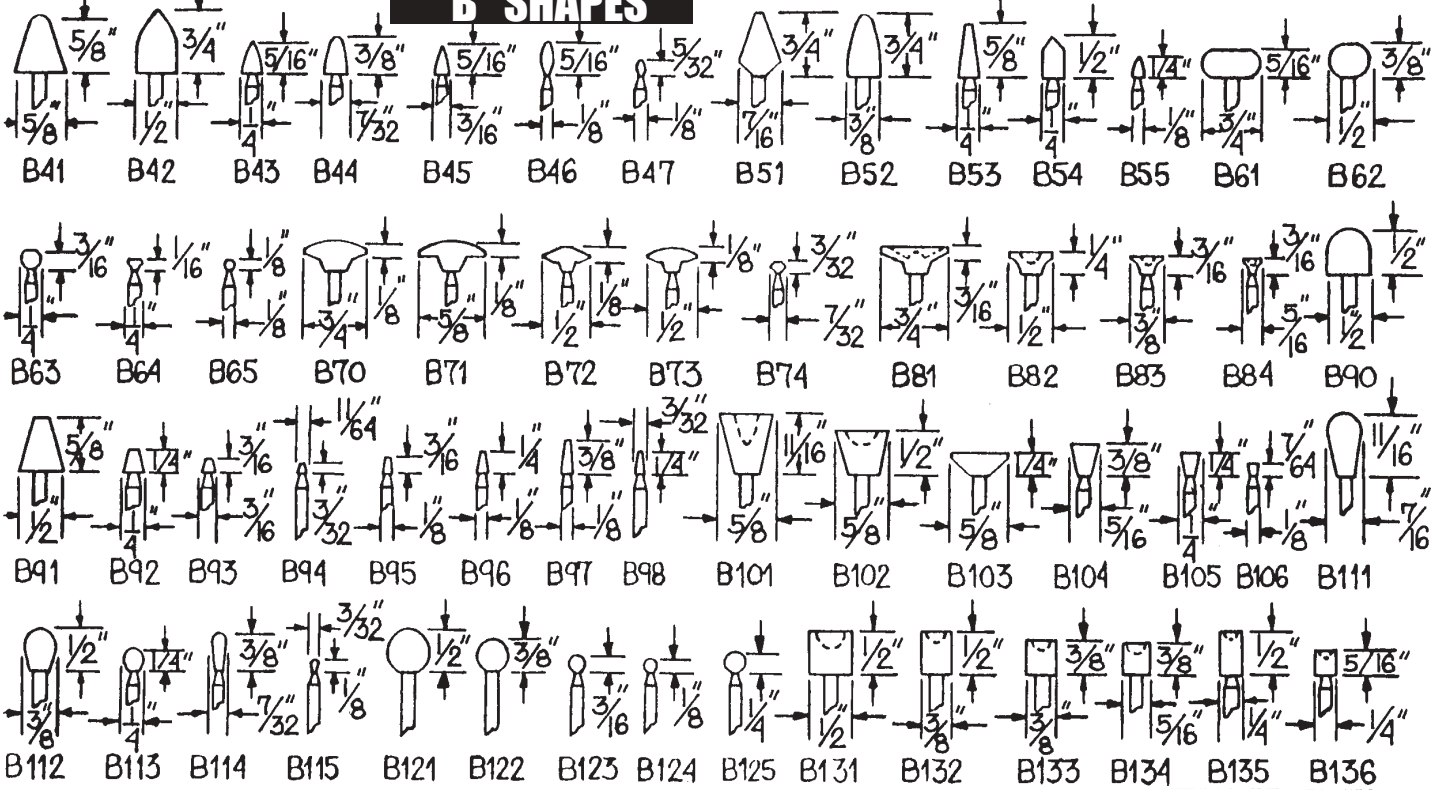
SHAPE NO.	WHEEL SIZE DIAM. X THK.	OVERHANG			
		1/2" & THREADED MANDRELS	1"	1-1/2"	2"
W141	3/32 x 5/32	105000	64500	46650	32400
W142	3/32 x 1/4	105000	64500	46650	32400
W143	1/8 x 1/8	105000	64500	46650	32400
W144	1/8 x 1/4	105000	64500	46650	32400
W145	1/8 x 3/8	105000	64500	46650	32400
W146	1/8 x 1/2	105000	64500	46650	32400
W149	5/32 x 1/4	105000	64500	46650	32400
W151	3/16 x 1/8	105000	64500	46650	32400
W152	3/16 x 1/4	105000	64500	46650	32400
W153	3/16 x 3/8	80850	52500	37500	26250
W154	3/16 x 1/2	70500	45600	31500	21970
W157	1/4 x 1/16	123000	65625	47770	33150
W158	1/4 x 1/8	105000	64500	46650	32400
W159	1/4 x 3/16	92400	57370	39370	27900
W160	1/4 x 1/4	81370	51000	34120	24000
W161	1/4 x 5/16	77250	45970	30900	22500
W162	1/4 x 3/8	68400	42370	28870	20850
W163	1/4 x 1/2	60000	38020	26250	18750
W164	1/4 x 3/4	45900	30000	21750	15900
W165	5/16 x 1/16	107400	62470	41250	29250
W166	5/16 x 1/8	96970	57000	35620	25120
W167	5/16 x 1/4	75000	45750	31120	22500
W168	5/16 x 5/16	68400	41770	28650	21000
W169	5/16 x 3/8	61650	37720	27000	19870
W170	5/16 x 1/2	52500	33000	23020	16650
W171	5/16 x 3/4	37120	25500	18750	14620
W172	3/8 x 1/16	99370	59250	41020	29250
W173	3/8 x 1/8	87600	53250	35250	24750
W174	3/8 x 1/4	69000	41250	27750	20400
W175	3/8 x 3/8	54000	33000	24150	18000
W176	3/8 x 1/2	45370	28500	21000	15900
W177	3/8 x 3/4	33750	23250	17620	13650
W178	3/8 x 1	26250	18750	14250	10870
W181	1/2 x 1/16	76390	55500	36750	25500
W182	1/2 x 1/8	73500	43650	29100	20770
W183	1/2 x 1/4	51750	31870	22500	17250
W184	1/2 x 3/8	41020	26400	19500	15000
W185	1/2 x 1/2	34500	22500	16870	13120
W186	1/2 x 3/4	26250	17400	12750	9750
W187	1/2 x 1	20620	13870	10120	7870
W190	5/8 x 1/16	61120	48000	31500	22650
W191	5/8 x 1/8	58870	34500	25120	18900
W192	5/8 x 1/4	43120	27370	19870	15220
W193	5/8 x 3/8	32250	23020	16500	12520
W194	5/8 x 1/2	29400	19120	13500	10500
W195	5/8 x 3/4	22120	14250	10120	7650
W196	5/8 x 1	17620	11620	8100	6150
W199	3/4 x 1/16	50930	44770	30000	21750
W200	3/4 x 1/8	50930	33520	23850	17850
W201	3/4 x 1/4	38250	24370	17400	13270
W202	3/4 x 3/8	30600	19500	13500	10120
W203	3/4 x 1/2	25500	15900	10870	8250
W204	3/4 x 3/4	18900	12000	8400	6220
W210	7/8 x 1/16	43650	35250	25720	18900
W211	7/8 x 1/8	43650	27900	20400	15820
W212	7/8 x 1/4	33750	20400	14400	11020
W213	7/8 x 3/8	27000	16870	11250	8250
W214	15/16 x 1/4	30520	18600	12750	9520
W215	1 x 1/8	38200	24900	18800	13870
W216	1 x 1/4	30520	18600	12750	9520

\*Reprinted in part, courtesy of the Grinding Wheel Institute

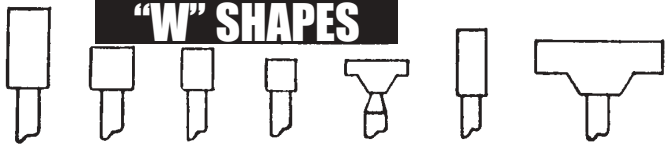
# "A" SHAPES



# "B" SHAPES



# "W" SHAPES



**"W" SHAPE SIZES ARE SHOWN ON THE FOLLOWING UPC CHART (SEE PAGE 7)**

## GENERAL PURPOSE MOUNTED POINTS

THESE MEDIUM GRIT MOUNTED POINTS ARE AVAILABLE IN A CHOICE OF THREE COLORS. THE COLORS ARE AN INDICATION OF THE WHEELS RELATIVE HARDNESS.\*

**WHITE:** SOFT TO MEDIUM    **BURNT-ORANGE:** MEDIUM TO HARD    **BLUE-GRAY:** HARD TO VERY HARD

“A” SHAPES ARE MOUNTED ON 1/4" X 1 1/2" SHANKS

“B” SHAPES ARE MOUNTED ON 1/8" X 1 1/2" SHANKS

25 PIECE MINIMUM PER ITEM

PRICES ARE PER PIECE

UPC # 691019 - ( )				
SHAPE	WHITE	BURNT ORANGE	BLUE GRAY	PRICE
A1	00005	00010	00015	\$1.60
A2	00020	00025	00030	\$0.97
A3	00035	00040	00045	\$1.72
A4	00050	00055	00060	\$1.09
A5	00065	00070	00075	\$0.92
A6	00080	00085	00090	\$0.92
A11	00095	00100	00105	\$1.18
A12	00110	00115	00120	\$0.92
A13	00125	00130	00135	\$1.09
A14	00140	00145	00150	\$0.69
A15	00155	00160	00165	\$0.88
A21	00170	00175	00180	\$0.76
A22	00185	00190	00195	\$0.67
A23	00200	00205	00210	\$0.69
A24	00215	00220	00225	\$0.63
A25	00230	00235	00240	\$0.76
A26	00245	00250	00255	\$0.67
A31	00260	00265	00270	\$0.92
A32	00275	00280	00285	\$0.69
A33	00290	00295	00300	\$0.67
A34	00305	00310	00315	\$0.80
A35	00320	00325	00330	\$0.67
A36	00335	00340	00345	\$0.92
A37	00350	00355	00360	\$0.69
A38	00365	00370	00375	\$0.63
A39	00380	00385	00390	\$0.53
A40	00395	00400	00405	\$0.67
B41	00410	00415	00420	\$0.67
B42	00425	00430	00435	\$0.63
B43	00440	00445	00450	\$0.59
B44	00455	00460	00465	\$0.59
B45	00470	00475	00480	\$0.59
B46	00485	00490	00495	\$0.59
B47	00500	00505	00510	\$0.53
B51	00515	00520	00525	\$0.63
B52	00530	00535	00540	\$0.63
B53	00545	00550	00555	\$0.63
B54	00560	00565	00570	\$0.59
B55	00575	00580	00585	\$0.53
B61	00590	00595	00600	\$0.63
B62	00605	00610	00615	\$0.59
B63	00620	00625	00630	\$0.53

UPC # 691019 - ( )				
SHAPE	WHITE	BURNT ORANGE	BLUE GRAY	PRICE
B64	00635	00640	00645	\$0.53
B65	00650	00655	00660	\$0.53
B70	00665	00670	00675	\$0.59
B71	00680	00685	00690	\$0.59
B72	00695	00700	00705	\$0.53
B73	00710	00715	00720	\$0.53
B74	00725	00730	00735	\$0.53
B81	00740	00745	00750	\$0.59
B82	00755	00760	00765	\$0.53
B83	00770	00775	00780	\$0.53
B84	00785	00790	00795	\$0.53
B90	00800	00805	00810	\$0.59
B91	00815	00820	00825	\$0.63
B92	00830	00835	00840	\$0.53
B93	00845	00850	00855	\$0.53
B94	00860	00865	00870	\$0.53
B95	00875	00880	00885	\$0.53
B96	00890	00895	00900	\$0.53
B97	00905	00910	00915	\$0.59
B98	00920	00925	00930	\$0.53
B101	00935	00940	00945	\$0.67
B102	00950	00955	00960	\$0.63
B103	00965	00970	00975	\$0.59
B104	00980	00985	00990	\$0.59
B105	00995	01000	01005	\$0.53
B106	01010	01015	01020	\$0.53
B111	01025	01030	01035	\$0.63
B112	01040	01045	01050	\$0.59
B113	01055	01060	01065	\$0.53
B114	01070	01075	01080	\$0.59
B115	01085	01090	01095	\$0.53
B121	01100	01105	01110	\$0.59
B122	01115	01120	01125	\$0.59
B123	01130	01135	01140	\$0.53
B124	01145	01150	01155	\$0.53
B125	01160	01165	01170	\$0.55
B131	01175	01180	01185	\$0.46
B132	01190	01195	01200	\$0.46
B133	01205	01210	01215	\$0.46
B134	01220	01225	01230	\$0.46
B135	01235	01240	01245	\$0.46
B136	01250	01255	01260	\$0.46

\*These wheels are not intended to be grade specific (see pg. 9). The end user may not always receive a wheel of the same grit size and hardness from one order to the next.

**GENERAL PURPOSE MOUNTED POINTS (CONTINUED)**

**D1 = 1/8" X 1-1/2" SHANK**

**D2 = 1/4" X 1-1/2" SHANK**

SHAPE & SHANK	SIZE DIA x THK	UPC # 691019-( )			PRICE
		WHITE	BURNT-ORANGE	BLUE-GRAY	
W141-D1	3/32 x 5/32	01265	01270	01275	0.42
W142-D1	3/32 x 1/4	01280	01285	01290	0.42
W143-D1	1/8 x 1/8	01295	01300	01305	0.42
W144-D1	1/8 x 1/4	01310	01315	01320	0.42
W145-D1	1/8 x 3/8	01325	01330	01335	0.46
W146-D1	1/8 x 1/2	01340	01345	01350	0.46
W149-D1	5/32 x 1/4	01355	01360	01365	0.42
W151-D1	3/16 x 1/8	01370	01375	01380	0.42
W152-D1	3/16 x 1/4	01385	01390	01395	0.42
W153-D1	3/16 x 3/8	01400	01405	01410	0.46
W154-D1	3/16 x 1/2	01415	01420	01425	0.46
W157-D1	1/4 x 1/16	01430	01435	01440	0.42
W158-D1	1/4 x 1/8	01445	01450	01455	0.42
W159-D1	1/4 x 3/16	01460	01465	01470	0.42
W160-D1	1/4 x 1/4	01475	01480	01485	0.42
W161-D1	1/4 x 5/16	01490	01495	01500	0.46
W162-D1	1/4 x 3/8	01505	01510	01515	0.46
W163-D1	1/4 x 1/2	01520	01525	01530	0.46
W164-D1	1/4 x 3/4	01535	01540	01545	0.48
W165-D1	5/16 x 1/16	01550	01555	01560	0.42
W166-D1	5/16 x 1/8	01565	01570	01575	0.42
W167-D1	5/16 x 1/4	01580	01585	01590	0.42
W168-D1	5/16 x 5/16	01595	01600	01605	0.46
W169-D1	5/16 x 3/8	01610	01615	01620	0.46
W170-D1	5/16 x 1/2	01625	01630	01635	0.46
W171-D1	5/16 x 3/4	01640	01645	01650	0.48
W172-D1	3/8 x 1/16	01655	01660	01665	0.42
W173-D1	3/8 x 1/8	01670	01675	01680	0.42
W174-D1	3/8 x 1/4	01685	01690	01695	0.42
W175-D1	3/8 x 3/8	01700	01705	01710	0.46
W176-D1	3/8 x 1/2	01715	01720	01725	0.46
W176-D2	3/8 x 1/2	01730	01735	01740	0.46
W177-D1	3/8 x 3/4	01745	01750	01755	0.48
W177-D2	3/8 x 3/4	01760	01765	01770	0.48
W178-D1	3/8 x 1	01775	01780	01785	0.53
W178-D2	3/8 x 1	01790	01795	01800	0.53
W179-D2	3/8 x 1-1/4	01805	01810	01815	0.67
W181-D1	1/2 x 1/16	01820	01825	01830	0.42

SHAPE & SHANK	SIZE DIA x THK	UPC # 691019-( )			PRICE
		WHITE	BURNT-ORANGE	BLUE-GRAY	
W182-D1	1/2 x 1/8	01835	01840	01845	0.42
W183-D1	1/2 x 1/4	01850	01855	01860	0.42
W184-D1	1/2 x 3/8	01865	01870	01875	0.46
W184-D2	1/2 x 3/8	01880	01885	01890	0.46
W185-D1	1/2 x 1/2	01895	01900	01905	0.46
W185-D2	1/2 x 1/2	01910	01915	01920	0.46
W186-D1	1/2 x 3/4	01925	01930	01935	0.48
W186-D2	1/2 x 3/4	01940	01945	01950	0.48
W187-D1	1/2 x 1	01955	01960	01965	0.53
W187-D2	1/2 x 1	01970	01975	01980	0.53
W188-D2	1/2 x 1-1/2	01985	01990	01995	0.80
W189-D2	1/2 x 2	02000	02005	02010	1.01
W190-D1	5/8 x 1/16	02015	02020	02025	0.46
W191-D1	5/8 x 1/8	02030	02035	02040	0.46
W192-D1	5/8 x 1/4	02045	02050	02055	0.46
W192-D2	5/8 x 1/4	02060	02065	02070	0.46
W193-D1	5/8 x 3/8	02075	02080	02085	0.48
W193-D2	5/8 x 3/8	02090	02095	02100	0.48
W194-D1	5/8 x 1/2	02105	02110	02115	0.48
W194-D2	5/8 x 1/2	02120	02125	02130	0.48
W195-D1	5/8 x 3/4	02135	02140	02145	0.53
W195-D2	5/8 x 3/4	02150	02155	02160	0.53
W196-D2	5/8 x 1	02165	02170	02175	0.59
W197-D2	5/8 x 2	02180	02185	02190	1.05
W198-D2	5/8 x 2-1/2	02195	02200	02205	1.30
W199-D1	3/4 x 1/16	02210	02215	02220	0.46
W200-D1	3/4 x 1/8	02225	02230	02235	0.46
W201-D1	3/4 x 1/4	02240	02245	02250	0.46
W202-D1	3/4 x 3/8	02255	02260	02265	0.48
W202-D2	3/4 x 3/8	02270	02275	02280	0.48
W203-D1	3/4 x 1/2	02285	02290	02295	0.48
W203-D2	3/4 x 1/2	02300	02305	02310	0.48
W204-D1	3/4 x 3/4	02315	02320	02325	0.53
W204-D2	3/4 x 3/4	02330	02335	02340	0.53
W205-D2	3/4 x 1	02345	02350	02355	0.59
W206-D2	3/4 x 1-1/4	02360	02365	02370	0.69
W207-D2	3/4 x 1-1/2	02375	02380	02385	0.84
W208-D2	3/4 x 2	02390	02395	02400	1.05

SHAPE & SHANK	SIZE DIA x THK	UPC # 691019-( )			PRICE
		WHITE	BURNT-ORANGE	BLUE-GRAY	
W209-D2	3/4 x 2-1/2	02405	02410	02415	1.30
W210-D1	7/8 x 1/16	02420	02425	02430	0.48
W211-D1	7/8 x 1/8	02435	02440	02445	0.48
W212-D1	7/8 x 1/4	02450	02455	02460	0.48
W212-D2	7/8 x 1/4	02465	02470	02475	0.48
W213-D1	7/8 x 3/8	02480	02485	02490	0.53
W213-D2	7/8 x 3/8	02495	02500	02505	0.53
W214-D1	15/16 x 1/4	02510	02515	02520	0.48
W214-D2	15/16 x 1/4	02525	02530	02535	0.48
W215-D1	1 x 1/8	02540	02545	02550	0.48
W215-D2	1 x 1/8	02555	02560	02565	0.48
W216-D1	1 x 1/4	02570	02575	02580	0.48
W216-D2	1 x 1/4	02585	02590	02595	0.48
W217-D2	1 x 3/8	02600	02605	02610	0.53
W218-D2	1 x 1/2	02615	02620	02625	0.53
W219-D2	1 x 3/4	02630	02635	02640	0.59
W220-D2	1 x 1	02645	02650	02655	0.63
W221-D2	1 x 1-1/2	02660	02665	02670	0.88
W222-D2	1 x 2	02675	02680	02685	1.09
W223-D2	1 x 2-1/2	02690	02695	02700	1.34
W225-D2	1-1/4 x 1/4	02705	02710	02715	0.59
W226-D2	1-1/4 x 3/8	02720	02725	02730	0.63
W227-D2	1-1/4 x 1/2	02735	02740	02745	0.63
W228-D2	1-1/4 x 3/4	02750	02755	02760	0.67
W229-D2	1-1/4 x 1	02765	02770	02775	0.76
W230-D2	1-1/4 x 1-1/4	02780	02785	02790	0.88
W231-D2	1-1/4 x 1-1/2	02795	02800	02805	1.05
W232-D2	1-1/4 x 2	02810	02815	02820	1.30
W235-D2	1-1/2 x 1/4	02825	02830	02835	0.63
W236-D2	1-1/2 x 1/2	02840	02845	02850	0.67
W237-D2	1-1/2 x 1	02855	02860	02865	0.80
W238-D2	1-1/2 x 1-1/2	02870	02875	02880	1.09
W239-D2	1-1/2 x 2	02885	02890	02895	1.34
W242-D2	2 x 1	02900	02905	02910	1.01
W243-D2	2 x 1-1/2	02915	02920	02925	1.34
W244-D2	2 x 2	02930	02935	02940	1.68

## GENERAL PURPOSE MOUNTED POINTS (CONTINUED) MOUNTED POINT KITS



100 PIECE BLUE-GRAY 1/8" DIAMETER SHANKS



100 PIECE BURNT-ORANGE 1/4" DIAMETER SHANKS

THE 1/8" DIAMETER SHANK SET CONTAINS THE FOLLOWING SHAPES (5 OF EACH).

B42 B45 B52 B81 B91 B97 B102 B122 B136 W144 W146  
W152 W160 W163 W167 W175 W176 W185 W200 W215

THE 1/4" DIAMETER SHANK SET CONTAINS THE FOLLOWING SHAPES.

A4 A12 A14 A21 A32 A37 A39 A40 W206 W218  
5 OF EACH ARE IN THE 50 PIECE SET.  
10 OF EACH ARE IN THE 100 PIECE SET.

EACH SET IS AVAILABLE IN THE FOLLOWING COLORS.

SET	COLOR	UPC # 691019-( )	LIST PRICE
1/8" 100 PIECE	WHITE	25001	86.40
	BURNT-ORANGE	25002	
	BLUE-GRAY	25003	
1/4" 50 PIECE	WHITE	25004	62.80
	BURNT-ORANGE	25005	
	BLUE-GRAY	25006	
1/4" 100 PIECE	WHITE	25007	119.90
	BURNT-ORANGE	25008	
	BLUE-GRAY	25009	

<b>WHITE:</b>	SOFT TO MEDIUM HARDNESS WHEELS BEST SUITED FOR STOCK REMOVAL OF HARDER STEELS.
<b>BURNT-ORANGE:</b>	MEDIUM TO HARD WHEELS THAT OFFER A WIDE VARIETY OF USES, FROM STOCK REMOVAL TO LIGHT DEBURRING.
<b>BLUE-GRAY:</b>	HARD TO VERY HARD WHEELS THAT STAND UP WELL TO HEAVIER DUTY GRINDING APPLICATIONS.

**NOTE:** KIT SET-UP BOXES ARE AVAILABLE TO DISTRIBUTORS FOR DESIGN OF THEIR OWN DISPLAY SETS. CALL FOR PRICING (UPC#25000).



50 PIECE WHITE 1/4" DIAMETER SHANKS

# GRADE SPECIFIC MOUNTED POINTS

The following pages depict groupings of wheels which are organized by bond type, grain type and color on charts that display the array of shapes, shanks, grit sizes and hardnesses that are usually on hand in either our finished or unfinished inventory. For each color grouping there is also shown both the range of hardnesses available and many competitive grade translations.

## INITIAL CHOICE GRADE SELECTION GUIDE APPLICATION & RECOMMENDATION

### ALUMINUM

- heavy deburring: coarse resin
- stock removal: fiber

### BRASS: resin

CEMENTED CARBIDE: green s/c (best) or black s/c

CENTER HOLE GRINDING: See page 29

CENTER LAPPING (EX-CELL-O): See page 29

CERAMICS (hard and brittle): green s/c

CHAMFERING EDGES: very hard blue-gray

DEBURRING: very hard blue-gray or very hard grayish-white

FORGING DIE GRINDING: hard blue-gray

### INTERNAL FIXED FEED:

- highest RC materials: very soft grayish-white
- general purpose tool room: soft white
- softer RC materials: medium burnt-orange

JIG GRINDING: See page 30

### OFF HAND (PORTABLE) GRINDING (TOOLS AND DIES):

- general purpose stock removal: medium burnt-orange
- stock removal with light deburring: hard burnt-orange
- general deburring: hard to very hard blue-gray
- wear resistant steels: medium black s/c

POLISHING AND BLENDING: fiber

PROFILE GRINDING: See page 29

### ROUGH GRINDING:

- castings with incorporated burnt sand: very hard, coarse black s/c
- castings with no burnt sand: hard, coarse blue-gray
- interrupted cut or severe dressing: very hard, coarse blue-gray

STAINLESS STEEL (400 SERIES): resin

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## TROUBLESHOOTING

PROBLEM	LIKELY CAUSE
Wheel loading/glazing	Wheel too hard or fine Not enough grinding pressure* RPM too fast
Chatter marks on workpiece	Wheel needs to be trued Wheel overhang is too great Wheel is too hard Grinder/collet is worn
Burning of workpiece	Wheel too hard or fine Not enough grinding pressure* Poor coolant flow (where used) Wrong bond type being used
Wheel life too short	Wrong grade Wheel, grinder or collet off balance

\*never use excess grinding pressure!

# GRADE SPECIFIC VITRIFIED MOUNTED POINTS

## BLUE-GRAY ALUMINUM OXIDE

These vitrified bonded, aluminum oxide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

I J **K** L M N O **P** Q R S T U V W X Y Z  
 very soft soft medium hard very hard

They are typically used in hard (O thru R) wheels or very hard (T) wheels for deburring, chamfering and other heavy duty uses. They are also commonly used in very soft wheels for jig grinding and other precision applications.

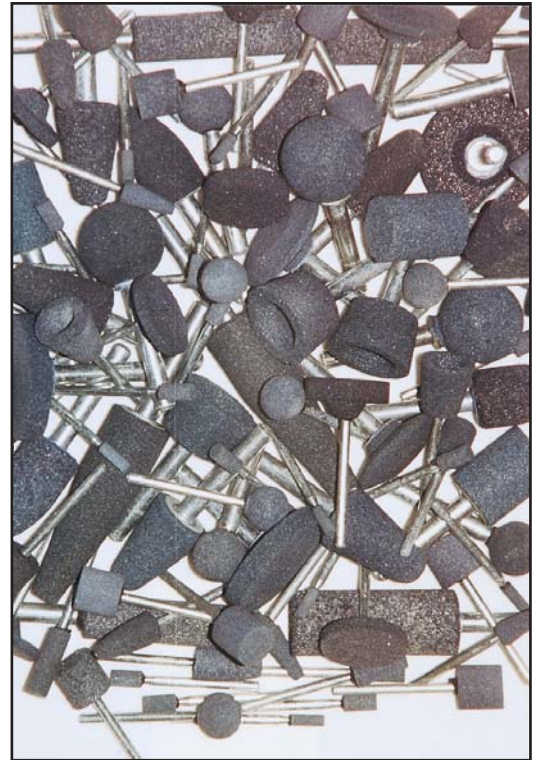
“A” shapes are mounted on 1/4" diameter by 1-1/2 long shanks

“B” shapes are mounted on 1/8" diameter by 1-1/2 long shanks

“W” shapes are mounted on the shanks specified:

D1 = 1/8" diameter by 1-1/2 long shank

D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
A1 7.60	36-O	36-S	46-P	46-T
	02945	02950	02955	02960
	60-P	100-P		
A2 4.60	46-Q	60-P		
	02980	02985		
A3 8.20	24-S	36-O	46-O	
	02990	02995	03005	
	46-T	60-O		
A4 5.20	36-P	60-P		
	03020	03025		
A5 4.40	36-P	60-P		
A6 4.40	46-R	60-P		
A11 5.60	24-R	24-T	30-R	36-P
	03055	03060	03065	03070
	36-T	46-O	46-T	60-P
	03075	03080	03085	03090
	80-N	80-P		
A12 4.40	36-O	36-T	46-O	60-P
A13 5.20	46-P	60-P		
A14 3.30	46-P	60-P		
A15 4.20	46-P	80-R		
A21 3.60	36-P	60-P		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A22 3.20	60-P		
A23 3.30	46-P	60-P	
A24 3.00	46-P	80-R	80-S
A25 3.60	36-P	46-P	60-P
A26 3.20	36-P	60-P	120-Q
A31 4.40	30-R	36-P	60-P
A32 3.30	36-P	46-P	60-P
A33 3.20	36-P	60-P	80-P
A34 3.80	36-P	46-P	60-P
A35 3.20	46-P	60-P	
A36 4.40	46-P	60-R	
A37 3.30	46-P	80-R	
A38 3.00	36-P	46-P	60-Q
A39 2.50	36-P	60-Q	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
A40 3.20	46-P	60-P	120-T	
B41 3.20	60-P			
B42 3.00	46-P	60-P	80-Q	
B43 2.80	80-R			
B44 2.80	46-P	80-R	90-T	120-T
B45 2.80	80-R			
B46 2.80	80-R	120-Q		
B47 2.50	80-R			
B51 3.00	46-P	60-R	80-R	
B52 3.00	46-P	60-Q	80-R	
B53 3.00	46-Q	60-R	80-R	120-P
B54 2.80	60-R	80-R		
B55 2.50	80-R	80-T	120-R	120-T



**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**  
**D1 = 1/8" X 1-1/2" SHANK**                      **D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W184-D1 2.20	60-R 80-P 04935 04940
W184-D2 2.20	60-R 80-P 04945 04950
W185-D1 2.20	46-L 46-P 46-T 60-K 04955 04960 04965 04970 60-M 60-Q 60-T 80-N 04975 04980 04985 04995 80-R 90-T 100-N 120-R 05000 05010 05015 05020
W185-D2 2.20	46-L 46-P 46-T 60-K 05030 05035 05040 05045 60-M 60-Q 60-T 80-N 05050 05055 05060 05070 80-R 90-T 100-N 120-R 05075 05085 05090 05095
W186-D1 2.30	36-P 60-M 60-Q 60-T 05105 05110 05115 05120
W186-D2 2.30	36-P 60-N 60-Q 05125 05135 05140 60-T 80-M 80-R 05145 05150 05155
W187-D1 2.50	60-R 60-T 05165 05170
W187-D2 2.50	36-R 36-T 46-T 05185 05190 05195 60-M 60-R 60-T 80-P 05200 05205 05210 05220
W188-D2 3.80	36-T 46-P 05235 05240 60-P 60-T 80-P 05250 05255 05260
W189-D2 4.80	46-P 60-Q 100-P 05265 05270 05275
W190-D1 2.20	80-R 120-T 05280 05285
W191-D1 2.20	80-R 120-T 05290 05295
W192-D1 2.20	60-P 05300
W193-D1 2.30	60-P 05320
W193-D2 2.30	60-P 05335
W194-D1 2.30	60-P 80-K 80-N 05345 05350 05355
W194-D2 2.30	60-P 05360
W195-D1 2.50	60-L 60-Q 60-T 05375 05380 05385
W195-D2 2.50	46-P 60-Q 60-T 80-R 05395 05405 05410 05415
W196-D2 2.80	36-Q 60-P 05420 05425
W197-D2 5.00	36-P 60-P 05440 05450
W198-D2 6.20	60-P 05470
W199-D1 2.20	60-Q 80-R 05475 05480

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W200-D1 2.20	60-Q 80-R 120-T 05495 05510 05520
W201-D1 2.20	60-P 80-R 05530 05540
W201-D2 2.20	60-P 80-R 05550 05560
W202-D1 2.30	60-P 80-R 05565 05570
W202-D2 2.30	60-P 80-R 05580 05585
W203-D1 2.30	60-Q 80-R 05595 05600
W203-D2 2.30	54-I 60-Q 80-R 05605 05610 05615
W204-D1 2.50	60-P 120-T 05630 05645
W204-D2 2.50	60-L 60-P 60-T 80-L 05650 05655 05660 05665 80-R 90-V 05670 05675
W205-D2 2.80	36-P 60-P 60-T 05685 05705 05710
W206-D2 3.30	60-P 05730
W207-D2 4.00	36-Q 60-P 05740 05745
W208-D2 5.00	24-T 36-P 60-P 05750 05760 05770
W209-D2 6.20	36-O 46-O 60-P 80-R 05780 05785 05790 05795
W210-D1 2.30	60-P 80-R 05800 05805
W211-D1 2.30	60-P 80-R 05810 05815
W211-D2 2.30	60-P 80-R 05820 05825
W212-D1 2.30	60-P 05830
W212-D2 2.30	60-P 120-R 05840 05845
W213-D1 2.50	60-P 05850
W213-D2 2.50	60-P 05855
W214-D1 2.30	60-Q 05860
W215-D1 2.30	46-P 60-Q 60-T 80-N 05865 05870 05875 05880 80-Q 120-T 05885 05890
W215-D2 2.30	60-Q 60-T 80-N 80-Q 05895 05900 05905 05910
W216-D1 2.30	46-P 60-Q 60-T 80-N 05915 05920 05925 05930 120-P 05935
W216-D2 2.30	46-P 60-Q 60-T 05940 05945 05950
W217-D2 2.50	46-P 60-P 05965 05970

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W218-D2 2.50	36-P 46-P 54-I 60-K 05980 05985 05990 05995 60-P 80-L 80-P 120-P 06000 06010 06015 06020
W219-D2 2.80	36-P 60-P 06025 06040
W220-D2 3.00	24-T 36-P 46-P 46-T 06045 06050 06060 06065 60-Q 60-T 80-K 120-R 06070 06075 06080 06090
W221-D2 4.20	24-S 30-T 36-P 60-P 06095 06100 06105 06110
W222-D2 5.20	24-T 36-M 36-P 46-P 06120 06125 06130 06135 60-P 80-N 06145 06150
W223-D2 6.40	36-P 60-P 06155 06165
W224-D2 7.40	36-P 60-P 06170 06180
W225-D2 2.80	46-P 60-P 06185 06190
W226-D2 3.00	36-R 60-P 06195 06205
W227-D2 3.00	36-P 60-P 06210 06225
W228-D2 3.20	36-P 60-P 06230 06240
W229-D2 3.60	36-P 60-P 06245 06250
W230-D2 4.20	30-Q 36-O 60-P 06265 06270 06280
W231-D2 5.00	36-P 60-P 06290 06295
W232-D2 6.20	36-O 60-P 06300 06305
W235-D2 3.00	46-P 60-K 60-P 80-R 06330 06335 06345 06350
W236-D2 3.20	30-R 36-P 46-P 54-I 06355 06360 06365 06370 60-K 60-P 80-K 80-N 06375 06380 06385 06390
W237-D2 3.80	36-P 60-P 06395 06410
W238-D2 5.20	24-T 36-P 60-P 06420 06425 06430
W239-D2 6.40	60-P 06435
W241-D2 9.00	60-P 06450
W242-D2 4.80	36-P 46-P 60-P 06465 06470 06480
W243-D2 6.40	46-P 06485
W244-D2 8.00	36-O 60-O 06495 06500

# GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)

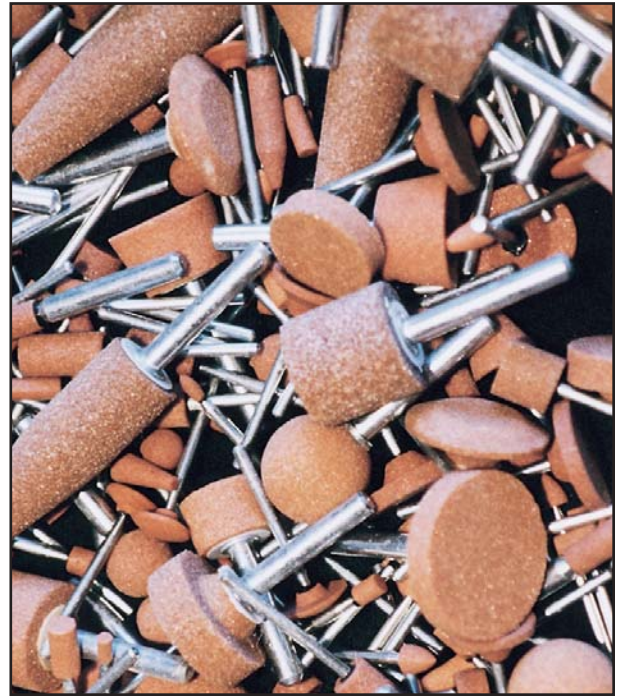
## BURNT ORANGE ALUMINUM OXIDE

These vitrified bonded, aluminum oxide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z  
very soft
soft
medium
hard
very hard

They are typically used in medium (R) hardness for stock removal of steel and are also occasionally used in a harder (U) wheel for deburring.

- “A” shapes are mounted on 1/4" diameter by 1-1/2 long shanks
- “B” shapes are mounted on 1/8" diameter by 1-1/2 long shanks
- “W” shapes are mounted on the shanks specified:  
 D1 = 1/8" diameter by 1-1/2 long shank  
 D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
A1 7.60	36-R	36-U	46-R	60-M
	06505	06510	06515	06520
	60-R	60-U	90-R	
	06525	06530	06535	
A2 4.60	46-R	46-U	60-R	
	06545	06550	06555	
	60-U	90-R		
	06560	06565		
A3 8.20	36-R	36-U	46-R	60-N
	06570	06575	06580	06585
	60-R	60-U	90-R	
	06590	06595	06600	
A4 5.20	36-S	46-R	60-R	60-U
	06605	06610	06615	06620
	90-R			
	06625			
A5 4.40	24-U	36-R	46-R	60-R
	06630	06635	06640	06645
	60-U	90-R	120-R	
	06650	06655	06660	
A6 4.40	46-R	60-R	60-U	90-R
	06665	06670	06675	06680
A11 5.60	30-U	36-R	46-R	60-J
	06685	06690	06695	06700
	60-R	60-U	90-R	
	06705	06710	06715	
A12 4.40	24-U	36-R	36-U	60-R
	06720	06725	06730	06735
	60-U	90-R	90-U	
	06740	06745	06750	
A13 5.20	24-R	36-R	60-R	60-U
	06755	06760	06765	06770
	90-R	120-R		
	06775	06780		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
A14 3.30	36-R	60-R	60-U	
	06785	06790	06795	
	90-R			
	06805			
A15 4.20	46-S	60-M	60-R	60-U
	06810	06815	06820	06825
	90-R	90-U	120-R	
	06830	06835	06840	
A21 3.60	36-R	46-R	60-R	60-U
	06845	06850	06855	06860
A22 3.20	60-R	60-U		
	06865	06870		
A23 3.30	36-U	46-R	60-R	
	06875	06880	06890	
	60-U	90-R		
	06895	06900		
A24 3.00	46-S	60-R	60-U	
	06905	06915	06920	
	90-R	90-U	120-R	
	06930	06935	06940	
A25 3.60	24-U	36-R	46-U	60-R
	06945	06950	06955	06960
	60-U	90-R		
	06965	06970		
A26 3.20	36-R	60-R	60-U	90-R
	06975	06980	06985	06990
	120-R			
	06995			
A31 4.40	36-R	36-U	46-R	
	07000	07005	07015	
	60-R	60-U	90-R	120-R
	07020	07025	07030	07035

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
A32 3.30	24-U	36-R	60-R	60-U
	07040	07045	07050	07055
	90-R	90-U		
	07060	07065		
A33 3.20	36-R	46-R	60-R	60-U
	07070	07075	07080	07085
	90-R	90-U	120-R	
	07090	07095	07100	
A34 3.80	36-R	46-R	60-R	60-U
	07105	07110	07115	07120
	90-R			
	07125			
A35 3.20	46-R	60-R	60-U	
	07130	07135	07140	
A36 4.40	46-R	60-M	60-R	60-U
	07145	07150	07155	07160
	90-R	120-R		
	07165	07170		
A37 3.30	46-R	60-M	60-R	60-U
	07175	07180	07185	07190
	90-R			
	07195			
A38 3.00	24-U	36-R	46-R	46-U
	07200	07205	07210	07215
	60-N	60-R	60-U	90-R
	07220	07225	07230	07235
	120-R			
	07240			
A39 2.50	36-R	46-R	60-R	
	07245	07250	07260	
	60-U	90-R		
	07265	07270		
A40 3.20	36-R	36-U	60-R	60-U
	07275	07280	07285	07290

**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**  
**D1 = 1/8" X 1-1/2" SHANK** **D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
B41 3.20	36-R 07295	60-R 07300	60-U 07305	90-R 07310
B42 3.00	46-R 07320	60-R 07325	60-U 07330	90-R 07335
B43 2.80	60-R 07345	60-U 07350	90-R 07355	90-U 07360
B44 2.80	60-R 07370	60-U 07375	90-R 07380	90-U 07385
B45 2.80	60-R 07395	60-U 07400	90-R 07405	90-U 07410
B46 2.80	60-R 07415	60-U 07420	90-R 07425	90-U 07430
B47 2.50	60-R 07440	90-R 07445	90-U 07450	120-R 07455
B51 3.00	46-R 07460	60-R 07465	60-U 07470	90-R 07475
B52 3.00	46-R 07485	46-U 07490	60-R 07495	60-U 07500
B53 3.00	60-R 07525	60-U 07530	90-R 07535	90-U 07540
B54 2.80	60-R 07550	60-U 07555	90-R 07560	90-U 07565
B55 2.50	60-R 07570	60-U 07575	90-R 07580	90-U 07585
B61 3.00	60-R 07600	60-U 07605	90-R 07610	
B62 2.80	46-R 07615	60-R 07620	60-U 07625	90-R 07630
B63 2.50	60-R 07640	90-R 07645	90-U 07650	
B64 2.50	90-R 07655	90-U 07660		
B65 2.50	60-R 07665	60-U 07670	90-R 07675	90-U 07680
B70 2.80	60-R 07685	60-U 07690	90-R 07695	120-R 07700
B71 2.80	60-R 07710	90-R 07715	90-U 07720	120-R 07725
B72 2.50	60-R 07730	90-R 07735	90-U 07740	120-R 07745
B73 2.50	60-R 07750	90-R 07755	90-U 07760	120-R 07765
B74 2.50	100-W 07775			
B81 2.80	60-R 07780	60-U 07785	90-R 07790	90-U 07795
B82 2.50	60-R 07805	90-R 07810	90-U 07815	
B83 2.50	60-R 07820	90-R 07825	90-U 07830	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
B84 2.50	60-R 07835	90-U 07840	120-R 07845	
B90 2.80	60-R 07850	60-U 07855	90-R 07860	
B91 3.00	60-R 07865	60-U 07870	90-R 07875	90-U 07880
B92 2.50	60-R 07885	60-U 07890	90-R 07895	90-U 07900
B93 2.50	60-R 07905	60-U 07910	90-R 07915	90-U 07920
B94 2.50	90-U 07925			
B95 2.50	60-R 07930	90-R 07935		
B96 2.50	46-R 07940	60-R 07945	60-U 07950	90-R 07955
B97 2.80	60-R 07960	60-U 07965	90-R 07970	90-U 07975
B98 2.50	60-R 08015	60-U 08020	90-R 08025	90-U 08030
B101 3.20	46-R 08040	60-R 08045	90-R 08050	90-U 08055
B102 3.00	60-R 08065	90-R 08070	90-U 08075	
B103 2.80	60-R 08080	60-U 08085	90-R 08090	90-U 08095
B104 2.80	60-R 08100	60-U 08105	90-R 08110	90-U 08115
B105 2.50	60-R 08120	60-U 08125	90-R 08130	90-U 08135
B106 2.50	60-R 08145	90-R 08155		
B111 3.00	60-R 08170	60-U 08175	90-R 08180	90-U 08185
B112 2.80	60-R 08195	60-U 08200	90-R 08205	90-U 08210
B113 2.50	60-R 08215	60-U 08220	90-R 08225	
B114 2.80	60-R 08230	60-U 08235	90-R 08240	
B115 2.50	90-R 08245	90-U 08250		
B121 2.80	46-R 08255	60-R 08260	60-U 08265	90-R 08270
B122 2.80	60-R 08280	60-U 08285	90-R 08300	90-U 08310
B123 2.50	60-R 08315	60-U 08320	60-W 08325	90-O 08330
B124 2.50	60-R 08365	60-U 08370	90-R 08375	90-U 08380
B125 2.60	60-R 08395	60-U 08400	90-R 08405	90-U 08410

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
B131 2.20	46-R 08415	60-N 08420	60-R 08425	60-U 08430
B132 2.20	46-R 08435	60-N 08440	60-R 08445	60-U 08465
B133 2.20	46-R 08450	60-N 08455	60-R 08460	60-U 08465
B134 2.20	60-R 08485	60-U 08490	90-R 08495	90-U 08500
B135 2.20	60-R 08510	60-U 08515	90-R 08520	90-U 08525
B136 2.20	54-R 08530	60-R 08535	60-U 08540	90-R 08545
W141-D1 2.00	90-U 08550	120-R 08555		
W142-D1 2.00	60-R 08560	60-U 08565	90-R 08570	90-U 08575
W143-D1 2.00	60-R 08580	60-U 08585	90-R 08590	90-U 08595
W144-D1 2.00	60-R 08595	60-U 08600	90-R 08605	90-U 08610
W145-D1 2.20	60-R 08615	60-U 08620	90-R 08625	90-U 08630
W146-D1 2.20	120-R 08635	120-U 08640	120-R 08645	
W149-D1 2.00	46-R 08650	60-N 08655	60-R 08660	60-U 08665
W151-D1 2.00	90-R 08670	90-U 08675	120-R 08680	120-U 08685
W152-D1 2.00	46-R 08690	60-R 08695	60-U 08700	90-R 08705
W153-D1 2.20	90-U 08710	120-R 08715	120-U 08720	
W154-D1 2.20	46-R 08725	60-R 08730	60-U 08735	90-R 08740
W155-D1 2.00	90-U 08745	120-R 08750		
W157-D1 2.00	60-R 08755	60-U 08760	90-R 08765	90-U 08770
W158-D1 2.00	120-R 08775	120-U 08780		
W159-D1 2.00	60-R 08785	60-U 08790	90-R 08795	90-U 08800
W160-D1 2.00	46-R 08805	60-R 08810	60-U 08815	90-N 08820
W161-D1 2.20	90-R 08825	90-U 08830	120-R 08835	120-U 08840
	46-R 08845	60-R 08850	60-U 08855	
	90-R 08865	90-U 08870		
	60-R 08875	60-U 08880	90-N 08885	90-R 08890
	90-U 08895			
	90-R 08900	90-U 08905	120-R 08910	
	90-R 08915	90-U 08920	120-R 08925	
	60-R 08930	60-U 08935	90-R 08940	90-U 08945
	60-R 08950	60-U 08955	90-N 08960	90-R 08965
	90-U 08970	120-R 08975	120-W 08980	
	60-R 08990	60-U 08995	80-N 09000	
	90-R 09005	90-U 09010		



**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**

**D1 = 1/8" X 1-1/2" SHANK**

**D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W203-D2 2.30	46-R 60-N 60-R 10820 10825 10830 60-U 90-R 90-U 120-R 10835 10840 10845 10850
W204-D1 2.50	46-R 60-R 60-U 90-R 10855 10860 10865 10870 120-R 10875
W204-D2 2.50	46-R 54-O 60-N 60-R 10880 10885 10890 10895 60-U 90-R 90-U 120-R 10900 10905 10910 10915
W205-D2 2.80	24-U 36-R 36-U 46-N 10920 10925 10930 10935 46-R 60-N 60-R 60-U 10940 10945 10950 10955 90-R 90-U 120-R 10960 10965 10970
W206-D2 3.30	36-R 60-R 60-U 120-O 10975 10980 10985 10990
W207-D2 4.00	46-R 60-R 60-U 90-R 11000 11005 11010 11015
W208-D2 5.00	36-R 46-R 60-R 60-U 11020 11025 11030 11035 120-R 11040
W209-D2 6.20	36-R 46-R 60-K 60-R 11045 11050 11055 11060 90-R 120-R 11065 11070
W210-D1 2.30	60-R 90-R 120-U 11075 11080 11085
W211-D1 2.30	60-R 60-U 90-R 120-U 11090 11095 11100 11105
W211-D2 2.30	60-R 60-U 90-R 120-U 11110 11115 11120 11125
W212-D1 2.30	60-R 11130
W212-D2 2.30	60-R 60-U 11135 11140
W213-D1 2.50	60-R 11145
W213-D2 2.50	60-R 90-R 11150 11155
W214-D1 2.30	60-R 11160

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W215-D1 2.30	46-R 60-R 60-U 90-O 11165 11170 11175 11180 90-R 90-U 120-R 11185 11190 11195
W215-D2 2.30	46-R 60-R 60-U 90-R 11200 11205 11210 11215 90-U 11220
W216-D1 2.30	46-R 46-U 11230 11235 60-R 60-U 90-R 11245 11250 11255
W216-D2 2.30	46-R 46-U 60-R 11260 11265 11275 60-U 90-R 11280 11285
W217-D2 2.50	46-R 60-R 60-U 11295 11300 11305 90-R 90-U 11310 11315
W218-D2 2.50	46-N 46-R 60-K 60-N 11320 11325 11330 11335 60-R 60-U 80-L 90-R 11340 11345 11350 11355 120-R 11360
W219-D2 2.80	36-R 36-U 60-R 60-U 11365 11370 11375 11380 90-R 11385
W220-D2 3.00	36-R 36-U 46-N 46-R 11390 11395 11400 11405 46-U 60-N 60-R 60-U 11410 11415 11420 11425 80-L 90-R 90-U 120-R 11430 11435 11440 11445
W221-D2 4.20	24-T 36-R 46-R 11455 11460 11465 60-R 60-U 90-R 11470 11475 11480
W222-D2 5.20	24-R 36-R 46-R 60-R 11485 11490 11495 11500 60-U 90-R 11505 11510
W223-D2 6.40	36-R 60-R 11515 11520
W225-D2 2.80	46-R 60-R 60-U 90-R 11545 11555 11560 11565

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )
W226-D2 3.00	36-R 46-R 60-L 60-R 11570 11575 11580 11585 60-U 90-R 11590 11595
W227-D2 3.00	36-R 60-R 60-U 90-R 11600 11605 11610 11615 90-U 11620
W228-D2 3.20	46-R 60-R 11625 11630
W229-D2 3.60	36-R 36-U 60-R 60-U 11635 11640 11645 11650 90-R 120-P 11655 11660
W230-D2 4.20	36-R 60-N 60-R 60-U 11665 11670 11675 11680
W231-D2 5.00	60-R 11685
W232-D2 6.20	60-N 60-R 60-U 120-R 11690 11695 11700 11705
W235-D2 3.00	36-R 46-R 60-R 60-U 11710 11715 11720 11725 90-R 90-U 120-R 11735 11740 11745
W236-D2 3.20	24-R 36-R 36-U 46-R 11750 11755 11760 11765 60-N 60-R 60-U 80-K 11770 11775 11780 11785 90-R 120-R 11790 11795
W237-D2 3.80	36-R 36-U 46-R 60-N 11800 11805 11810 11815 60-R 60-U 80-K 90-R 11820 11825 11830 11835
W238-D2 5.20	24-T 36-U 46-R 11845 11850 11855 60-N 60-R 60-U 11860 11865 11870
W239-D2 6.40	36-R 46-R 60-R 11875 11880 11885
W242-D2 4.80	24-R 36-R 36-U 46-R 11890 11895 11900 11905 60-K 60-R 60-U 90-R 11910 11915 11920 11925
W243-D2 6.40	36-R 46-R 60-N 60-R 11930 11935 11940 11945
W244-D2 8.00	60-R 120-P 11950 11955

# GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)

## WHITE ALUMINUM OXIDE

These vitrified bonded, aluminum oxide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

H I J K L M N O P Q R S T U V W X Y Z  
 very soft soft medium hard very hard

They are typically used in soft to medium (L thru R) wheels for stock removal of harder steels. They are also frequently used in very soft wheels for jig grinding or internal grinding.

- “A” shapes are mounted on 1/4" diameter by 1-1/2 long shanks
- “B” shapes are mounted on 1/8" diameter by 1-1/2 long shanks
- “W” shapes are mounted on the shanks specified:
  - D1 = 1/8" diameter by 1-1/2 long shank
  - D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A1 7.60	36-Q	60-M	60-Q
	11960	11965	11970
A2 4.60	60-Q		
	11985		
A3 8.20	36-N	36-Q	
	11990	11995	
A4 5.20	60-N	60-Q	
	12005	12010	
A5 4.40	46-Q	60-N	60-Q
	12015	12020	12025
A6 4.40	46-Q	60-N	60-Q
	12030	12035	12040
A11 5.60	120-Q		
	12045		
A12 4.40	60-Q		
	12050		
A13 5.20	36-Q	60-N	60-Q
	12055	12060	12065
A14 3.30	46-Q	60-M	60-Q
	12070	12075	12080
A15 4.20	60-Q		
	12085		
A21 3.60	60-N	60-Q	
	12090	12095	
A22 3.20	60-M	60-R	100-Q
	12105	12110	12115
A23 3.30	46-P	60-N	60-Q
	12120	12125	12130
	60-Q		
	12135		
	60-Q		
	12145		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A24 3.00	60-M	80-Q	
	12150	12155	
A25 3.60	46-T	60-Q	120-R
	12160	12165	12170
A26 3.20	46-Q	60-M	60-Q
	12175	12180	12185
A31 4.40	46-Q	60-N	60-Q
	12195	12200	12205
A32 3.30	60-Q		
	12210		
A33 3.20	60-Q		
	12225		
A34 3.80	46-Q	60-N	60-Q
	12230	12235	12240
A35 3.20	60-M	60-Q	
	12245	12250	
A36 4.40	36-R	60-M	60-Q
	12255	12260	12265
A37 3.30	80-T		
	12270		
A38 3.00	60-M	60-Q	
	12275	12280	
A39 2.50	36-Q	60-J	60-N
	12285	12290	12295
A40 3.20	60-Q		
	12300		
B41 3.20	60-N	60-Q	100-Q
	12305	12310	12315
	60-N	60-R	
	12320	12325	
	60-Q		
	12330		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B42 3.00	60-Q	80-R	
	12335	12340	
B43 2.80	60-Q	90-T	
	12345	12350	
B44 2.80	46-Q	90-U	100-R
	12355	12360	12365
B45 2.80	90-Q		
	12370		
B46 2.80	90-Q		
	12375		
B47 2.50	90-R		
	12380		
B51 3.00	46-T	60-T	80-R
	12385	12390	12395
B52 3.00	46-Q	60-Q	80-Q
	12400	12405	12410
B53 3.00	80-T	120-Q	
	12415	12420	
B54 2.80	60-T	80-Q	120-R
	12425	12430	12440
B55 2.50	90-T		
	12445		
B61 3.00	90-R	120-R	
	12450	12455	
B62 2.80	90-Q		
	12460		
B63 2.50	60-Q		
	12465		
B64 2.50	90-R		
	12470		
	80-Q		
	12475		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B65 2.50	90-R		
	12480		
B70 2.80	100-R		
	12485		
B71 2.80	90-R		
	12490		
B72 2.50	60-Q	120-S	
	12495	12500	
B73 2.50	60-Q	120-S	
	12505	12510	
B81 2.80	46-T	80-R	90-N
	12515	12520	12525
B82 2.50	90-R		
	12530		
B83 2.50	100-N	120-Q	
	12535	12540	
B84 2.50	90-P		
	12545		
B90 2.80	60-Q	80-N	
	12550	12555	
B91 3.00	46-T	60-Q	
	12560	12565	
B92 2.50	60-Q	90-R	
	12570	12575	
B93 2.50	60-R		
	12580		
B94 2.50	80-T		
	12585		
B95 2.50	90-R		
	12590		
B96 2.50	90-R	120-R	
	12595	12600	

**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**

**D1 = 1/8" X 1-1/2" SHANK**

**D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B97 2.80	46-T	80-R	
	12605	12610	
	120-R	120-T	
B98 2.50	60-T	80-R	100-N
	12635	12640	12645
	120-R		
B101 3.20	46-T	60-Q	
	12655	12660	
B102 3.00	80-Q		
	12665		
B103 2.80	60-Q	100-T	
	12670	12675	
B104 2.80	60-L	90-Q	
	12680	12685	
B105 2.50	60-N	90-R	
	12690	12695	
B106 2.50	60-K	90-R	
	12700	12705	
B111 3.00	60-Q		
	12710		
B112 2.80	60-Q	120-Q	
	12715	12720	
B113 2.50	90-R		
	12725		
B114 2.80	90-Q		
	12730		
B115 2.50	120-R		
	12735		
B121 2.80	60-M	60-Q	
	12745	12750	
	60-W	100-S	120-Q
B122 2.80	60-N	60-Q	60-V
	12770	12775	12780
	100-N	100-S	
B123 2.50	60-R	120-R	
	12795	12800	
B124 2.50	60-K	90-R	
	12805	12810	
B125 2.60	60-N	60-Q	90-R
	12815	12820	12825
B131 2.20	46-T	60-Q	
	12830	12840	
	120-Q	120-W	
B132 2.20	46-T	60-N	80-Q
	12855	12860	12865
	120-Q		
B133 2.20	46-T	60-N	60-Q
	12875	12880	12885
	90-Q		
B134 2.20	60-N	60-Q	60-T
	12895	12900	12905
	100-Q		
B135 2.20	80-N	80-Q	90-T
	12915	12920	12925
	120-R		
B136 2.20	60-Q	60-T	120-Q
	12935	12940	12945
W141-D1 2.00	120-R		
	12950		
W142-D1 2.00	60-T	80-R	100-N
	12955	12960	12965
	120-T		
W143-D1 2.00	60-K	90-R	
	12975	12980	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W144-D1 2.00	80-T	90-R	100-N
	12985	12990	12995
	120-R		
W145-D1 2.20	80-R	80-T	120-R
	13005	13010	13015
	120-T		
W146-D1 2.20	80-R	120-R	120-T
	13025	13030	13035
	13020		
W149-D1 2.00	120-Q		
	13040		
W151-D1 2.00	90-Q		
	13045		
W152-D1 2.00	80-R	90-N	120-Q
	13050	13055	13060
	60-N	80-Q	120-T
W153-D1 2.20	60-N	80-Q	120-T
	13065	13070	13075
	60-R	60-T	80-N
W154-D1 2.20	13080	13085	13090
	80-R	120-T	
	13095	13100	
W157-D1 2.00	80-Q	120-T	
	13105	13110	
W158-D1 2.00	80-Q	120-T	
	13115	13120	
W159-D1 2.00	120-T		
	13125		
W160-D1 2.00	46-T	60-K	60-N
	13130	13135	13140
	60-Q	80-K	
	13145	13155	
W161-D1 2.20	60-Q	90-T	120-R
	13175	13180	13185
	80-N	90-T	120-N
W162-D1 2.20	13190	13195	13200
	120-Q	60Q	
	13205	13187	
W163-D1 2.20	60-K	60-N	60-Q
	13210	13215	13220
	90-T	100-N	120-Q
	13225	13230	13235
W163-D2 2.20	120-W		
	13240		
	60-K	60-N	60-Q
W164-D1 2.30	13245	13250	13255
	90-T	100-N	120-Q
	13260	13265	13270
W164-D2 2.30	120-W		
	13275		
	60-P	80-Q	80-T
W165-D1 2.00	13280	13285	13290
	120-Q		
	13295		
W166-D1 2.00	60-P	80-Q	80-T
	13300	13305	13310
	120-Q		
W167-D1 2.00	13315		
	90-Q		
	13320		
W168-D1 2.20	120-T		
	13330		
	80-L	90-Q	
W169-D1 2.20	13345	13350	
	80-Q		
	13355		
W170-D1 2.20	60-N	60-Q	90-T
	13360	13365	13370
	100-Q		
W170-D2 2.20	60-N	60-Q	90-T
	13380	13385	13390
W171-D1 2.30	60-Q		
	13400		
W171-D2 2.30	60-Q		
	13405		
W172-D1 2.00	90-R	100-R	120-T
	13410	13415	13420
	90-R	100-R	120-N
W173-D1 2.00	13425	13430	13435
	120-T		
	13440		
W174-D1 2.00	60-N	60-Q	80-Q
	13445	13450	13455
	90-T		
W175-D1 2.20	60-N	60-Q	80-H
	13465	13470	13475
	60-N	60-Q	80-H
W175-D2 2.20	13480	13485	13490
	46-Q	60-N	80-Q
	13495	13500	13505
W176-D1 2.20	90-T	100-N	
	13510	13515	
	46-Q	60-N	80-Q
W176-D2 2.20	13520	13525	13530
	90-T	100-N	
	13535	13540	
W177-D1 2.30	46-L	60-Q	
	13545	13550	
	46-L	60-Q	
W177-D2 2.30	13555	13560	
	60-Q		
	13565		
W178-D1 2.50	46-P	60-Q	120-P
	13570	13575	13580
	46-N	46-Q	60-Q
W178-D2 2.50	13585	13590	13595
	80-Q	90-T	
	13600	13605	
W179-D2 3.20	80-Q	90-T	
	13600	13605	
	80-Q	100-T	
W181-D1 2.00	13610	13620	
	80-L	80-Q	100-R
	13625	13630	13635
W182-D1 2.00	60-N	60-W	80-Q
	13640	13645	13650
	120-Q		
W183-D1 2.00	13655		
	80-Q		
	13660		
W184-D1 2.20	80-Q		
	13665		
	46-M	46-Q	60-J
W185-D1 2.20	13670	13675	13680
	60-K	60-Q	60-S
	13685	13690	13695
W185-D2 2.20	80-H	80-K	80-N
	13700	13705	13710
	90-T	100-N	120-Q
W185-D2 2.20	13715	13720	13725
	120-W		
	13730		
W185-D2 2.20	46-M	46-Q	60-J
	13735	13740	13745
	60-K	60-Q	60-S
W185-D2 2.20	13750	13755	13760
	80-H	80-K	80-N
	13765	13770	13775
W185-D2 2.20	90-T	100-N	120-Q
	13780	13785	13790
	120-W		
W185-D2 2.20	13795		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W186-D1 2.30	46-P	60-Q	60-T
	13800	13805	13810
	80-K	80-N	100-P
	13815	13820	13825
W186-D2 2.30	120-Q		
	13830		
	46-Q	60-Q	60-T
W187-D1 2.50	13835	13840	13845
	80-N		
	13850		
W187-D2 2.50	60-N	60-Q	90-T
	13865	13870	13875
	120-N	120-R	120-T
W188-D2 3.80	13880	13885	13890
	60-N	60-Q	
	13900	13905	
W189-D2 4.80	46-Q	60-Q	60-S
	13915	13920	13925
	90-Q	90-T	
W190-D1 2.20	13930	13935	
	90-R		
W191-D1 2.20	13940		
	90-R		
W192-D1 2.20	13945		
	60-Q	120-Q	
W193-D1 2.30	13955	13965	
	80-Q	120-Q	
W193-D2 2.30	13975	13980	
	80-Q	120-Q	
W194-D1 2.30	13990	13995	
	60-N	80-R	
W194-D2 2.30	14000	14005	
	60-N	80-H	100-N
W195-D1 2.50	14010	14015	14020
	60-K	60-N	60-Q
	14025	14030	14035
W195-D2 2.50	46-N	60-N	60-Q
	14040	14045	14050
	120-O		
W196-D2 2.80	14055		
	80-L	80-Q	90-T
	14060	14065	14070
W197-D2 5.00	36-Q	60-N	60-Q
	14075	14080	14085
	90-T		
W198-D2 6.20	14090		
	46-Q		
W199-D1 2.20	14095		
	100-R		
W200-D1 2.20	14100		
	60-N	60-Q	
W201-D1 2.20	14105	14110	
	46-N	60-N	60-Q
	14115	14120	14125
W201-D2 2.20	46-N	60-N	60-Q
	14130	14135	14140
	60-Q	90-T	
W202-D1 2.30	14145	14150	
	60-Q	90-T	
	14155		
W202-D2 2.30	60-Q	90-T	
	14160	14165	
	60-N	80-Q	
W203-D1 2.30	14175	14180	
	60-N	80-Q	
	14185	14190	
W203-D2 2.30	60-Q		
	14200		
	46-P	60-N	60-Q
W204-D1 2.50	14205	14210	14215
	60-T	90-T	
	14220	14225	



**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**

**D1 = 1/8" X 1-1/2" SHANK**

**D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A1	30-T	36-P	60-Q
7.60	14855	14860	14865
	120-N		
	14870		
A2	36-Q	60-Q	
4.60	14875	14880	
A3	30-T	36-Q	
8.20	14885	14895	
	46-P	60-Q	
	14900	14905	
A4	36-Q	60-Q	
5.20	14910	14915	
A5	30-T	46-R	60-Q
4.40	14920	14925	14930
A6	30-T	60-R	
4.40	14935	14940	
A11	30-T	36-Q	60-Q
5.60	14945	14950	14955
A12	30-T	60-Q	
4.40	14960	14965	
A13	60-Q		
5.20	14970		
A14	60-Q		
3.30	14975		
A21	60-Q		
3.60	14980		
A23	60-Q		
3.30	14985		
A24	46-T	60-Q	
3.00	14990	14995	
A25	60-Q		
3.60	15000		
A26	60-Q		
3.20	15005		
A31	30-T	46-R	60-Q
4.40	15010	15015	15020
A32	60-Q		
3.30	15025		
A34	60-Q		
3.80	15035		
A35	60-Q		
3.20	15040		
A36	36-T	60-R	
4.40	15045	15047	
A37	36-Q	60-Q	
3.30	15050	15055	
A38	36-Q	60-Q	
3.00	15060	15065	
A39	36-Q	46-R	60-R
2.50	15070	15075	15080
A40	60-Q		
3.20	15085		
B41	60-Q		
3.20	15090		
B42	60-R		
3.00	15095		
B43	60-T		
2.80	15100		
B44	60-W	80-S	120-R
2.80	15105	15110	15115
B45	60-T		
2.80	15120		
B46	100-R		
2.80	15125		
B51	60-M	120-R	
3.00	15130	15135	
B52	80-T	100-U	120-R
3.00	15140	15145	15150
B53	60-T		
3.00	15155		
B54	60-U		
2.80	15160		
B55	80-T		
2.50	15165		
B62	60-R		
2.80	15170		
B72	60-R		
2.50	15175		
B73	60-R		
2.50	15180		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B81	60-T		
2.80	15185		
B82	100-T		
2.50	15190		
B91	60-T		
3.00	15195		
B96	80-T		
2.50	15200		
B97	80-T		
2.80	15205		
B98	100-R		
2.50	15210		
B101	60-L		
3.20	15215		
B102	60-T		
3.00	15220		
B103	80-Q		
2.80	15225		
B104	60-R		
2.80	15230		
B114	100-T		
2.80	15235		
B121	60-T		
2.80	15240		
B122	80-R	100-T	
2.80	15245	15250	
B123	80-R	100-T	
2.50	15255	15260	
B124	100-T		
2.50	15265		
B125	100-S		
2.60	15270		
B131	60-Q		
2.20	15275		
B132	60-T		
2.20	15280		
B133	60-T		
2.20	15290		
B134	60-R		
2.20	15295		
B135	80-R		
2.20	15300		
B136	60-T		
2.20	15305		
W142-D1	100-R	120-X	
2.00	15310	15315	
W143-D1	100-T		
2.00	15320		
W144-D1	80-T		
2.00	15325		
W145-D1	80-Q	80-T	90-X
2.20	15330	15335	15340
	120-X		
	15345		
W146-D1	80-W	100-T	
2.20	15350	15355	
W151-D1	80-R		
2.00	15360		
W152-D1	80-T		
2.00	15365		
W153-D1	120-R	120-X	
2.20	15370	15375	
W154-D1	80-S	100-T	
2.20	15385	15390	
	120-X		
	15395		
W157-D1	90-R		
2.00	15400		
W158-D1	90-R		
2.00	15405		
W160-D1	60-T	100-S	
2.00	15410	15420	
W161-D1	60-T		
2.20	15425		
W162-D1	60-Q	60-T	80-M
2.20	15430	15435	15440
	60-Q	60-W	
W163-D1	15445	15455	
2.20	120-Q	120-X	
	15460	15465	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W163-D2	60-Q	60-W	
2.20	15470	15480	
	120-Q	120-X	
	15485	15490	
W164-D1	60-T	60-W	
2.30	15495	15500	
W164-D2	60-T	60-W	
2.30	15505	15510	
W167-D1	120-X		
2.00	15515		
W168-D1	60-N		
2.20	15520		
W169-D1	60-R	80-L	
2.20	15525	15530	
W170-D1	60-W		
2.20	15535		
W170-D2	60-W		
2.20	15540		
W171-D1	60-R		
2.30	15545		
W171-D2	60-R		
2.30	15550		
W172-D1	60-R		
2.00	15555		
W173-D1	100-R		
2.00	15560		
W175-D1	60-L		
2.20	15565		
W175-D2	60-L		
2.20	15570		
W176-D1	60-R	60-T	
2.20	15575	15580	
W176-D2	60-R	60-T	
2.20	15590	15595	
W177-D1	60-T		
2.30	15605		
W177-D2	60-T		
2.30	15610		
W178-D1	60-T	60-W	
2.50	15615	15620	
W178-D2	46-T	60-N	80-L
2.50	15625	15630	15635
W179-D2	46-T	60-T	80-T
3.20	15640	15645	15650
W183-D1	60-T		
2.00	15655		
W185-D1	60-L	60-Q	60-T
2.20	15665	15670	15675
W185-D2	60-L	60-Q	60-T
2.20	15690	15695	15700
W186-D1	46-Q	60-L	60-T
2.30	15710	15715	15720
W186-D2	60-T		
2.30	15730		
W187-D1	60-Q		
2.50	15740		
W187-D2	60-Q	60-T	120-X
2.50	15745	15750	15755
W188-D2	46-L	46-P	60-R
3.80	15760	15765	15770
W189-D2	46-T		
4.80	15775		
W190-D1	90-R		
2.20	15780		
W191-D1	90-R		
2.20	15785		
W196-D2	60-T		
2.80	15790		
W197-D2	30-T	46-T	60-R
5.00	15795	15800	15805
W201-D1	80-T		
2.20	15810		
W201-D2	80-T		
2.20	15815		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W203-D1	60-K	80-K	120-K
2.30	15830	15835	15840
W203-D2	60-K	60-R	80-K
2.30	15845	15850	15855
W204-D2	60-T	80-L	
2.50	15860	15865	
W205-D2	46-T	60-M	60-Q
2.80	15870	15875	15880
W206-D2	60-T		
3.30	15885		
W207-D2	24-P	30-T	
4.00	15890	15895	
	60-O	60-Q	
	15905	15910	
W209-D2	30-Q		
6.20	15915		
W210-D1	80-T		
2.30	15920		
W211-D1	80-T		
2.30	15925		
W215-D1	100-W		
2.30	15930		
W215-D2	100-W		
2.30	15935		
W216-D1	60-R		
2.30	15940		
W216-D2	60-T	120-T	
2.30	15945	15950	
W217-D2	60-Q		
2.50	15955		
W218-D2	46-J	60-K	
2.50	15960	15965	
W219-D2	60-T		
2.80	15975		
W220-D2	30-T	36-R	60-L
3.00	15980	15985	15990
	60-Q	80-K	80-L
	15995	16000	16005
W221-D2	30-R		
4.20	16010		
W222-D2	30-U	60-T	
5.20	16025	16030	
W223-D2	80-P		
6.40	16035		
W225-D2	60-R	80-K	
2.80	16040	16045	
W226-D2	60-Q		
3.00	16050		
W227-D2	60-Q		
3.00	16055		
W229-D2	60-Q		
3.60	16065		
W231-D2	60-T		
5.00	16070		
W232-D2	60-Q		
6.20	16075		
W235-D2	60-Q		
3.00	16080		
W236-D2	30-T	36-L	60-N
3.20	16085	16090	16095
	60-P		
	16100		
W237-D2	30-T	36-R	
3.80	16105	16110	
W238-D2	46-Q		
5.20	16115		
W242-D2	36-Q	46-L	60-Q
4.80	16120	16130	16135

# GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)

## GRAYISH-WHITE (32A) ALUMINUM OXIDE

These vitrified bonded, aluminum oxide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

J	K	L	M	N	O	P	Q	R
	very soft			soft			medium	
	S	T	U	V	W			
		hard		very hard				

They are used to provide equivalent product to Norton (registered trademark) 32A specifications, which are premium priced but manufactured in Mexico. They are commonly used in precision or internal grinding operations in soft to very soft hardnesses or for heavy deburring in hard specifications.

“A” shapes are mounted on 1/4" diameter by 1-1/2 long shanks  
 “B” shapes are mounted on 1/8" diameter by 1-1/2 long shanks  
 “W” shapes are mounted on the shanks specified:  
 D1 = 1/8" diameter by 1-1/2 long shank  
 D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A1 8.36	30-U 16140	36-T 16145	46-T 16150
A2 5.06	36-T 16155	60-T 16160	60-U 16165
A3 9.02	30-T 16175	36-L 16180	46-U 16185
A4 5.72	36-T 16195	60-Q 16200	
A11 6.16	30-U 16205	36-N 16210	80-N 16215
A12 4.84	46-T 16230	60-U 16235	100-U 16240
A14 3.63	60-L 16250	60-U 16255	
A15 4.62	90-U 16260		
A21 3.96	60-T 16265		
A22 3.52	36-T 16270		
A23 3.63	60-U 16275		
A24 3.30	60-U 16280		
A25 3.96	36-T 16285		
A26 3.52	36-T 16290	60-T 16295	
A34 4.18	36-T 16315		
A36 4.84	36-T 16320		
A37 3.63	46-U 16325	60-Q 16330	
A38 3.30	36-T 16335	60-U 16350	
A39 2.75	60-Q 16365	60-U 16370	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )	
A40 3.52	36-T 16375	
B41 3.52	60-U 16380	
B42 3.30	60-U 16385	100-U 16390
B44 3.08	100-V 16395	
B46 3.08	90-U 16400	
B52 3.30	80-N 16405	100-U 16410
B53 3.30	100-U 16420	
B54 3.08	60-U 16425	
B55 2.75	100-U 16430	
B63 2.75	100-U 16435	
B72 2.75	90-U 16445	
B73 2.75	90-U 16450	
B81 3.08	80-L 16455	100-U 16460
B82 2.75	100-U 16465	
B91 3.30	90-U 16475	
B96 2.75	80-O 16480	100-U 16485
B97 3.08	100-U 16490	
B98 2.75	100-U 16495	
B101 3.52	100-U 16505	
B121 3.08	80-V 16515	100-U 16520
B122 3.08	60-Q 16525	100-U 16530

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B123 2.75	100-U 16535		
B124 2.75	120-U 16540		
B125 2.86	80-U 16545		
B131 2.42	60-M 16555	60-T 16560	
B132 2.42	60-Q 16570	60-T 16575	
B133 2.42	80-T 16585		
B135 2.42	60-U 16590		
W142-D1 2.20	100-U 16610		
W143-D1 2.20	120-U 16615		
W144-D1 2.20	80-O 16620	100-Q 16625	100-U 16630
W145-D1 2.42	100-U 16645		
W146-D1 2.42	100-U 16650		
W152-D1 2.20	100-U 16655		
W153-D1 2.42	100-U 16660		
W160-D1 2.20	60-J 16670	80-L 16675	80-V 16680
W161-D1 2.42	120-O 16690	120-U 16695	
W162-D1 2.42	100-L 16700		
W163-D1 2.42	60-Q 16705	60-U 16710	
	60-N 16715	60-P 16720	60-U 16725
	80-P 16730	120-O 16735	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W163-D2 2.42	60-N 16740	60-P 16745	60-U 16750
W164-D1 2.53	80-P 16755	120-O 16760	
W164-D2 2.53	60-Q 16770	60-U 16775	
W168-D1 2.42	60-Q 16790	60-U 16795	
W174-D1 2.20	60-L 16805		
W175-D1 2.42	80-M 16830		
W175-D2 2.42	46-K 16835	60-L 16840	60-P 16845
	80-L 16850	80-N 16855	
W176-D1 2.42	46-K 16860	60-L 16865	60-P 16870
	80-L 16875	80-N 16880	
W176-D2 2.42	60-L 16915	60-N 16920	60-Q 16925
	60-U 16930	80-M 16935	100-U 16940
W177-D1 2.53	60-L 16950	60-N 16955	60-Q 16960
W177-D2 2.53	80-N 16975	60-U 16985	80-N 16990
W178-D2 2.75	60-U 16990	80-M 16995	100-U 16995
W179-D2 3.52	60-L 16995	60-N 16995	60-Q 16995
W182-D1 2.20	60-L 16995	60-N 16995	60-Q 16995
W184-D1 2.42	100-U 16995	120-T 17010	
W184-D2 2.42	120-T 17015		



## GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)

D1 = 1/8" X 1-1/2" SHANK

D2 = 1/4" X 1-1/2" SHANK

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B53 3.46	46-Q	80-N	80-Q
	18300	18305	18310
	100-U	120-Q	
	18315	18320	
B55 2.88	100-Q		
	18330		
B61 3.46	60-Q		
	18335		
B62 3.22	60-Q		
	18340		
B63 2.88	60-Q		
	18345		
B70 3.22	60-Q		
	18350		
B71 3.22	80-Q		
	18355		
B72 2.88	80-Q		
	18360		
B73 2.88	80-Q		
	18365		
B74 2.88	120-T		
	18370		
B81 3.22	80-R		
	18375		
B83 2.88	100-P		
	18380		
B84 2.88	100-P		
	18385		
B90 3.22	120-Q		
	18390		
B91 3.46	36-P	80-P	
	18395	18400	
B96 2.88	100-Q		
	18410		
B97 3.22	80-Q		
	18415		
B98 2.88	100-Q		
	18420		
B114 3.22	80-T		
	18455		
B121 3.22	60-Q	120-N	120-R
	18460	18465	18470
B122 3.22	46-Q	80-Q	100-K
	18475	18480	18485
	120-Q		
	18490		
B123 2.88	60-P		
	18495		
B124 2.88	120-Q		
	18500		
B131 2.54	60-Q	80-N	
	18505	18510	
B132 2.54	60-Q	120-Q	
	18515	18520	
B133 2.54	60-Q		
	18525		
B134 2.54	46-Q	80-Q	
	18530	18535	
B135 2.54	46-Q	80-T	100-P
	18540	18545	18550
B136 2.54	80-N	80-Q	
	18555	18560	
W142-D1 2.30	100-Q	120-T	
	18570	18575	
W143-D1 2.30	100-S		
	18580		
W144-D1 2.30	80-M	100-Q	
	18590	18595	
W145-D1 2.54	100-Q		
	18600		
W146-D1 2.54	60-Q		
	18605		
W151-D1 2.30	100-Q		
	18610		
W152-D1 2.30	60-M	100-Q	
	18615	18620	
W153-D1 2.54	120-Q		
	18630		
W154-D1 2.54	60-L	60-Q	100-Q
	18635	18640	18645

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W160-D1 2.30	60-Q	80-N	80-Q
	18655	18660	18665
W161-D1 2.54	60-R		
	18670		
W162-D1 2.54	60-Q	80-M	80-T
	18675	18680	18685
	120-M		
	18690		
W163-D1 2.54	60-Q	80-T	120-Q
	18695	18700	18705
W163-D2 2.54	60-Q	80-T	120-Q
	18710	18715	18720
W164-D1 2.64	60-R	80-N	
	18725	18730	
W164-D2 2.64	60-R	80-N	
	18735	18740	
W167-D1 2.30	60-Q		
	18745		
W170-D1 2.54	120-K	120-Q	
	18750	18755	
W170-D2 2.54	120-K	120-Q	
	18760	18765	
W173-D1 2.30	100-Q		
	18770		
W174-D1 2.30	60-Q	100-N	
	18775	18780	
W175-D1 2.54	80-Q	80-T	100-K
	18790	18795	18800
W175-D2 2.54	80-Q	80-T	100-K
	18805	18810	18815
W176-D1 2.54	60-N	60-Q	120-Q
	18820	18825	18830
W176-D2 2.54	60-N	60-Q	120-Q
	18835	18840	18845
W177-D1 2.64	46-Q	60-Q	
	18850	18855	
W177-D2 2.64	46-Q	60-Q	
	18860	18865	
W178-D2 2.88	60-R		
	18870		
W179-D2 3.68	36-Q	46-Q	80-Q
	18875	18880	18885
	80-U		
	18890		
W182-D1 2.30	120-V		
	18895		
W183-D1 2.30	80-M		
	18900		
W185-D1 2.54	46-Q	60-N	60-Q
	18930	18935	18940
	80-Q	80-T	100-N
	18945	18950	18955
	120-T		
	18965		
W185-D2 2.54	46-Q	60-N	60-Q
	18970	18975	18980
	80-Q	80-T	100-N
	18985	18990	18995
	120-T		
	19005		
W186-D1 2.64	60-N	60-Q	
	19010	19015	
W186-D2 2.64	36-P	60-N	60-Q
	19020	19025	19030
W187-D1 2.88	36-Q		
	19035		
W187-D2 2.88	36-Q	36-S	46-L
	19040	19045	19050
	46-S	60-Q	
	19055	19060	
W188-D2 4.38	36-Q	36-U	46-Q
	19065	19070	19075
	60-P		
	19080		
W189-D2 5.52	36-Q	36-U	60-Q
	19085	19090	19095
W191-D1 2.54	100-Q		
	19105		
W194-D2 2.64	36-Q		
	19115		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W195-D1 2.88	80-Q		
	19120		
W196-D2 3.22	46-S	60-R	
	19130	19135	
W197-D2 5.76	30-Q	46-Q	
	19145	19150	
W199-D1 2.54	80-P		
	19155		
W200-D1 2.54	80-P		
	19160		
W201-D1 2.54	100-Q		
	19170		
W201-D2 2.54	100-Q		
	19180		
W202-D1 2.64	60-Q		
	19185		
W202-D2 2.64	60-Q		
	19195		
W203-D2 2.64	30-Q		
	19210		
W204-D1 2.88	60-P		
	19230		
W204-D2 2.88	36-P	36-S	36-U
	19235	19240	19245
	60-M	60-P	60-R
	19250	19255	19260
	60-T		
	19265		
W205-D2 3.22	30-Q	36-S	36-U
	19280	19285	19290
	60-Q		
	19295		
W207-D2 4.60	36-Q	36-S	
	19305	19310	
	36-W	60-Q	
	19315	19320	
W208-D2 5.76	30-Q	36-T	46-Q
	19325	19340	19345
	60-N		
	19350		
W211-D1 2.64	80-Q		
	19365		
W213-D1 2.88	60-K		
	19370		
W215-D1 2.64	60-Q	100-P	
	19375	19380	
W215-D2 2.64	46-Q	60-Q	100-P
	19385	19390	19395
W216-D1 2.64	60-Q	80-N	
	19400	19405	
W216-D2 2.64	60-Q	80-N	
	19410	19415	
W217-D2 2.88	100-Q		
	19425		
W218-D2 2.88	30-M	30-Q	30-S
	19430	19435	19440
	46-Q	60-R	
	19450	19455	
	80-N	80-T	
	19460	19465	
W220-D2 3.46	24-T	30-Q	36-S
	19470	19475	19480
	36-T	36-W	46-Q
	19485	19490	19495
	60-N	60-Q	
	19500	19505	
W221-D2 4.84	24-S	30-Q	30-V
	19515	19520	19525
	36-S		
	19535		
W222-D2 5.98	30-Q	36-S	36-W
	19540	19545	19550
	46-Q	60-Q	
	19560	19565	
W223-D2 7.3	30-Q		
	19570		
W225-D2 3.22	36-S	46-Q	80-Q
	19575	19585	19590
W226-D2 3.46	46-Q	60-N	
	19595	19600	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W227-D2 3.46	36-R	36-T	60-Q
	19605	19610	19615
W228-D2 3.68	30-Q		
	19620		
W229-D2 4.14	30-Q	60-N	60-Q
	19630	19640	19645
	30-Q	36-U	46-P
	19650	19655	19660
W230-D2 4.84	30-S		
	19675		
W235-D2 3.466	24-T	30-Q	
	19685	19690	
	36-S	60-Q	60-T
	19700	19705	19710
W236-D2 3.68	30-Q	36-S	46-P
	19715	19720	19725
	60-N	60-P	60-Q
	19730	19735	19740
W237-D2 4.38	24-T	30-Q	36-S
	19745	19750	19755
	60-Q		
	19760		
W238-D2 5.98	30-Q	30-S	60-Q
	19770	19775	19780
W239-D2 7.36	36-R		
	19790		
W242-D2 5.52	30-Q	36-T	46-Q
	19795	19800	19805
	80-P		
	19810		
W243-D2 7.36	80-P		
	19815		
W244-D2 9.20	30-Q		
	19820		

# GRADE SPECIFIC VITRIFIED MOUNTED POINTS

## GREEN SILICON CARBIDE

These vitrified bonded, silicon carbide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

I    J    K    L    **M**    N    O    P    **Q**    R    S    T    U  
 soft                      medium                      hard                      very hard

They are typically used for grinding hard, brittle materials. It is sometimes difficult to tell from a specification whether a wheel is of black or of green silicon carbide. Green is often indicated as follows:

GC   39C   1C   49GC   5C   80C

“A” shapes are mounted on 1/4" diameter by 1-1/2 long shanks

“B” shapes are mounted on 1/8" diameter by 1-1/2 long shanks

“W” shapes are mounted on the shanks specified:

D1 = 1/8" diameter by 1-1/2 long shank

D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A1	36-O	60-M	
9.50	19825	19830	
A2	46-P		
5.76	19835		
A3	36-O	60-M	60-Q
10.26	19840	19845	19850
A4	80-N		
6.50	19855		
A5	60-L	60-P	
5.50	19865	19870	
A11	80-N		
7.00	19875		
A12	60-M		
5.50	19880		
A13	60-M	60-R	
6.50	19885	19890	
A14	60-M		
4.12	19895		
A21	60-O		
4.50	19900		
A23	60-M		
4.12	19910		
A24	60-L		
3.76	19920		
A31	60-M	80-Q	
5.50	19930	19935	
A34	60-M		
4.76	19945		
A36	60-O	80-Q	
5.50	19950	19955	
A37	60-O		
4.12	19960		
A38	60-M		
3.76	19965		
A39	60-M		
3.12	19975		
B41	60-M		
4.00	19980		
B42	46-R		
3.76	19985		
B44	120-Q		
3.50	19995		
B51	80-M	120-M	
3.76	20000	20005	
B52	60-L	120-O	
3.76	20010	20015	
B53	100-M		
3.76	20020		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B54	60-M		
3.50	20025		
B73	120-Q		
3.12	20030		
B82	100-Q		
3.12	20035		
B96	60-Q		
3.12	20045		
B97	60-Q	80-Q	100-L
3.50	20050	20055	20060
B101	80-Q		
4.00	20065		
B103	60-Q	120-Q	
3.50	20070	20075	
B105	120-P		
3.12	20080		
B114	100-Q		
3.50	20085		
B121	80-Q		
3.50	20090		
B122	80-K	120-O	
3.50	20095	20100	
B123	80-N	80-Q	120-Q
3.12	20105	20110	20115
B124	120-O		
3.12	20125		
B131	80-P		
2.76	20130		
B134	80-Q		
2.76	20135		
B135	80-L		
2.76	20140		
B136	80-L		
2.76	20145		
W142-D1	120-L		
2.50	20150		
W143-D1	100-R		
2.50	20160		
W144-D1	60-Q	120-K	120-Q
2.50	20165	20170	20175
W145-D1	80-N	80-Q	
2.76	20180	20185	
W146-D1	100-L	100-Q	
2.76	20190	20195	
W152-D1	100-K	120-M	
2.50	20200	20205	
W-153-D1	80-L	120-P	
2.76	20210	20215	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W154-D1	100-Q		
2.76	20220		
W158-D1	100-L	120-R	
2.50	20225	20235	
W160-D1	80-L	80-Q	120-P
2.50	20245	20250	20255
W161-D1	80-R		
2.76	20260		
W162-D1	100-K	100-M	
2.76	20265	20270	
W163-D1	60-M	80-Q	120-Q
2.76	20275	20280	20285
W163-D2	60-M	80-Q	120-Q
2.76	20290	20295	20300
W164-D1	80-N	80-Q	
2.88	20305	20310	
W164-D2	80-N	80-Q	
2.88	20315	20320	
W171-D1	60-O		
2.88	20340		
W171-D2	60-O		
2.88	20345		
W173-D1	120-Q		
2.50	20350		
W175-D1	46-L	100-L	120-J
2.76	20355	20360	20365
	120-P		
	20370		
W175-D2	46-L	100-L	120-J
2.76	20380	20385	20390
	120-P		
	20395		
W176-D1	60-M	120-O	
2.76	20405	20415	
W176-D2	60-M	120-O	
2.76	20420	20430	
W178-D1	60-N		
3.12	20435		
W179-D2	46-Q		
4.00	20445		
W182-D1	100-N		
2.50	20455		
W184-D1	60-P	120-K	
2.76	20465	20470	
W184-D2	60-P	120-K	
2.76	20475	20480	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W185-D1	46-M	60-M	60-Q
2.76	20485	20490	20495
	80-Q	100-K	100-L
	20500	20505	20510
	120-M	120-O	
	20515	20520	
W185-D2	46-M	60-M	60-Q
2.76	20525	20530	20535
	80-Q	100-K	100-L
	20540	20545	20550
	120-M	120-O	
	20555	20560	
W186-D1	80-Q		
2.88	20565		
W187-D1	60-N		
3.12	20580		
W188-D2	60-N	60-R	
4.76	20595	20600	
W189-D2	60-R		
6.00	20615		
W194-D1	80-N	120-J	
2.88	20625	20630	
W197-D2	46-Q	60-R	
6.26	20645	20650	
W199-D1	80-Q	100-Q	
2.76	20660	20665	
W200-D1	46-Q	80-M	100-Q
2.76	20670	20675	20680
W201-D1	120-M		
2.76	20690		
W201-D2	120-M		
2.76	20700		
W202-D1	80-P	120-M	
2.88	20710	20715	
W202-D2	80-P	120-M	
2.88	20725	20730	
W203-D2	80-M	100-Q	120-M
2.88	20740	20745	20750
W204-D1	80-K	80-M	100-N
3.12	20755	20760	20765
W204-D2	80-K	80-M	100-N
3.12	20775	20780	20785
W208-D2	60-R	120-M	
6.26	20795	20800	
W215-D1	80-K	80-Q	
2.88	20805	20810	
W216-D1	80-M	80-Q	
2.88	20820	20825	

**GRADE SPECIFIC VITRIFIED MOUNTED POINTS (CONTINUED)**  
**D1 = 1/8" X 1-1/2" SHANK** **D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W216-D2 2.88	46-Q	60-S	80-M
	20830	20835	20840
	80-Q		
	20845		
W218-D2 3.12	36-L	46-M	80-M
	20850	20855	20860
	100-K		
	20870		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W220-D2 3.76	36-M	46-R	60-M
	20875	20880	20885
	60-Q	80-M	80-R
	20890	20895	20900
	120-K		
W221-D2 5.26	36-M	60-M	
	20915	20920	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )	
W226-D2 3.76	60-M	120-M
	20930	20935
W227-D2 3.76	60-M	
	20940	
W229-D2 4.50	60-L	
	20945	
W235-D2 3.76	60-R	80-M
	20965	20970

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W236-D2 4.00	36-O	46-K	60-I
	20975	20980	20985
	60-M	60-V	
	20990	21000	
W237-D2 4.76	80-M		
	21015		

## GRADE SPECIFIC RESIN MOUNTED POINTS

These resin bonded, aluminum oxide mounted points are available from Modern Abrasive in the following hardness range (popular hardnesses are highlighted).

N
O
P
Q
R
S
T
U
V
W  
soft
medium
hard
very hard

They are typically used in medium hardness for stock removal of stainless steel and other heat sensitive materials. They are also most commonly used in coarser grits than vitrified wheels because of their better finishing abilities. Resin bond specifications are indicated by a "B" in the bond section of the grade that is not succeeded by an "F" or "M".

"A" shapes are mounted on 1/4" diameter by 1-1/2 long shanks

"B" shapes are mounted on 1/8" diameter by 1-1/2 long shanks

"W" shapes are mounted on the shanks specified:

D1 = 1/8" diameter by 1-1/2 long shank

D2 = 1/4" diameter by 1-1/2 long shank



Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A1 11.20	30-R 21020 60-Q 21035	36-Q 21025	36-S 21030
A2 8.00	30-Q 21040	60-Q 21045	
A3 12.00	24-O 21050 30-S 21065 46-O 21080	24-R 21055 36-N 21070 60-Q 21085	24-U 21060 36-Q 21075 120-Q 21090
A4 6.60	30-R 21095		
A5 7.80	60-Q 21100		
A6 7.80	46-Q 21105		
A11 9.00	24-P 21110 36-S 21125 120-Q 21140	24-S 21115 36-U 21130	36-Q 21120 60-Q 21135
A12 7.80	30-R 21145	60-Q 21150	60-T 21155
A13 8.60	46-Q 21160		
A14 6.80	60-Q 21165		
A15 7.60	46-S 21170	60-R 21175	
A21 7.00	36-Q 21185	60-Q 21190	
A22 6.20	36-Q 21195		
A23 6.80	36-Q 21200		
A24 6.00	46-S 21210	60-R 21215	
A25 7.00	36-R 21220	46-Q 21225	60-Q 21230
A26 6.20	36-S 21235	60-R 21240	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
A31 8.00	36-P 21245	36-S 21250	60-Q 21255
A32 6.40	60-Q 21260		
A33 6.00	60-Q 21265		
A34 6.60	36-R 21270	60-Q 21275	
A36 7.40	36-Q 21280 60-S 21295	36-S 21285	46-T 21290
A37 5.80	36-Q 21300	60-Q 21305	
A38 6.00	24-Q 21310 60-Q 21325	36-Q 21315	46-O 21320
A39 5.20	36-R 21330	46-P 21335	60-Q 21340
A40 6.20	36-R 21345		
B41 6.20	60-Q 21350		
B42 6.00	46-S 21355	60-Q 21360	
B43 5.20	120-Q 21365		
B44 5.20	60-T 21370	120-R 21375	
B45 5.20	80-Q 21380		
B46 5.20	120-Q 21385		
B51 6.00	46-Q 21390	120-R 21395	
B52 6.00	46-Q 21400 120-Q 21415	60-Q 21405	60-T 21410
B53 6.00	46-Q 21420		
B61 5.40	60-Q 21425		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
B70 5.20	60-S 21430		
B71 5.20	60-Q 21435		
B72 5.00	120-Q 21440		
B73 5.00	120-Q 21445		
B81 5.20	80-S 21455		
B90 5.60	60-Q 21460		
B91 6.00	60-Q 21465		
B92 5.00	60-Q 21470		
B96 5.00	80-Q 21475		
B97 5.20	60-R 21480	120-R 21485	
B101 6.20	60-Q 21490		
B103 5.20	60-R 21495		
B104 5.20	60-Q 21500		
B105 5.00	60-Q 21505		
B111 6.00	60-Q 21510		
B112 5.60	60-Q 21515		
B121 5.60	36-R 21520	60-Q 21525	
B122 5.20	80-Q 21530		
B123 5.00	60-R 21535		
B124 5.00	100-Q 21540		
B125 5.20	60-W 21545		
B131 4.60	60-Q 21550		

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )			
B135 4.60	46-U 21555	60-Q 21560	80-R 21565	
B136 4.20	80-Q 21570			
W142-D1 4.00	100-R 21575			
W143-D1 4.00	120-Q 21580			
W144-D1 4.00	80-Q 21585			
W145-D1 4.20	80-Q 21590			
W146-D1 4.60	46-R 21595			
W154-D1 4.60	46-U 21600	80-R 21605		
W161-D1 4.20	80-Q 21610			
W162-D1 4.20	60-Q 21615			
W163-D1 4.60	46-S 21620	60-U 21625		
W164-D1 5.00	46-S 21630	60-R 21635		
W164-D2 5.00	46-S 21640	46-W 21645	60-R 21650	
W167-D1 4.00	36-S 21660			
W171-D1 5.00	36-Q 21665			
W171-D2 5.00	60-Q 21670	80-U 21675		
W175-D1 4.20	60-Q 21680	60-W 21685		
W175-D2 4.20	60-Q 21690			
W176-D1 4.60	36-T 21695	60-Q 21700	120-R 21705	
W176-D2 4.60	60-Q 21710			
W177-D1 5.00	36-Q 21715	60-Q 21720		
W177-D2 5.00	36-Q 21725	60-Q 21730		

**GRADE SPECIFIC RESIN MOUNTED POINTS (CONTINUED)**

**D1 = 1/8" X 1-1/2" SHANK**

**D2 = 1/4" X 1-1/2" SHANK**

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W178-D1 5.60	46-S		
	21735		
W178-D2 5.60	46-S	46-T	60-Q
	21740	21745	21750
W179-D2 6.00	24-W	36-S	36-U
	21755	21760	21765
	46-Q	46-S	60-R
	21770	21775	21780
	120-Q		
	21785		
W182-D1 4.00	46-R	60-Q	80-W
	21790	21795	21800
	120-R		
	21805		
W183-D1 4.00	46-R		
	21810		
W185-D1 4.60	36-R	60-Q	
	21820	21825	
W185-D2 4.60	36-R	60-Q	
	21835	21840	
W186-D2 5.00	60-Q		
	21850		
W187-D2 5.60	36-R	36-T	60-Q
	21855	21860	21865
W188-D2 6.40	24-R	36-R	60-Q
	21870	21875	21880
	120-Q		
	21885		
W189-D2 7.60	24-R	30-P	36-Q
	21890	21895	21900
	36-U	36-W	46-S
	21905	21910	21920
	60-Q	60-S	120-U
	21925	21930	21935

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W191-D1 4.20	60-W		
	21940		
W192-D1 4.20	46-U		
	21945		
W195-D2 5.20	36-R		
	21950		
W196-D2 5.80	36-R	46-Q	
	21955	21960	
	24-Q	24-R	30-Q
W197-D2 7.80	21965	21970	21975
	30-T	46-Q	60-R
	21980	21985	21990
W198-D2 9.20	36-R	36-T	
	21995	22000	
W200-D1 4.20	46-U	60-Q	60-S
	22005	22010	22015
W200-D2 4.20	46-U	60-Q	60-S
	22020	22025	22030
W201-D2 4.20	30-R		
	22035		
W203-D2 4.80	60-Q		
	22040		
W204-D2 5.20	24-R	36-R	60-Q
	22045	22050	22055
W205-D2 5.80	36-R	60-Q	
	22060	22065	
W206-D2 6.20	46-P		
	22070		
W207-D2 6.60	24-V	30-P	36-S
	22075	22080	22085
	36-U		
	22090		
W208-D2 7.80	30-R	30-T	
	22100	22105	
	46-S	60-Q	60-S
	22110	22115	22120

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W209-D2 9.20	36-T	46-Q	
	22125	22130	
W211-D1 4.40	60-W		
	22135		
W212-D1 4.40	60-W		
	22145		
W215-D1 4.40	60-R	60-T	60-W
	22150	22155	22160
	80-T		
	22165		
W215-D2 4.40	36-S	46-T	
	22170	22175	
W217-D2 4.60	36-Q	80-R	
	22180	22185	
W218-D2 5.00	24-Q	36-Q	
	22190	22195	
W219-D2 5.40	36-S		
	22205		
W220-D2 6.00	30-Q	36-R	46-Q
	22215	22220	22225
	60-Q	120-S	
	22230	22235	
W221-D2 6.80	30-S	36-R	46-P
	22240	22245	22250
	60-Q		
	22255		
W222-D2 8.00	24-Q	24-S	
	22260	22265	
	36-Q	36-U	60-Q
	22275	22280	22285
W223-D2 9.40	46-S	60-R	
	22295	22300	
W225-D2 4.80	36-Q	60-T	
	22310	22315	

Shape & \$ List	Grits & Hardnesses UPC # 691019-( )		
W226-D2 5.40	36-Q	60-P	
	22320	22325	
W227-D2 5.60	120-Q		
	22340		
W228-D2 6.20	24-Q		
	22345		
W229-D2 6.80	36-R		
	22350		
W230-D2 7.00	30-Q	30-S	60-P
	22355	22360	22365
W231-D2 7.60	36-Q		
	22370		
W232-D2 8.80	36-Q	46-Q	60-Q
	22375	22380	22385
W235-D2 5.00	24-Q	30-S	
	22390	22395	
W236-D2 5.80	30-S	36-Q	46-Q
	22400	22405	22410
	60-R		
	22415		
W237-D2 7.00	36-Q		
	22420		
W238-D2 7.80	30-T	36-Q	
	22425	22430	
W239-D2 9.00	36-R		
	22435		
W242-D2 8.00	24-P	36-Q	46-Q
	22440	22445	22450
	80-Q		
	22455		
W243-D2 9.20	36-Q		
	22460		

## GRADE SPECIFIC FIBER AND RUBBER MOUNTED POINTS

Fiber and rubber bonded wheels are more expensive than are resin and vitrified bonded wheels. Fiber bonded are composed of laminated layers that include a mixture of abrasive, cotton and either a rubber or a resin bond. They are used primarily for polishing applications that require very light deburring or blending. Very resistant to loading, they may be used for stock removal of soft, non-ferrous metals such as aluminum.

Rubber bonded wheels are made from a mixture of abrasive and rubber. They are used for either satin finishing or polishing, dependent largely upon their grit size. Due to their high costs, Modern Abrasive stocks only the most popular of these items. A list follows.



SHAPE	SHANK DIAMETER & LENGTH	DESCRIPTION	UPC# 691019-	LIST PRICE
B52	1/8" x 1-1/2	SOFT FIBER 80	45005	6.11
B52	1/8" x 1-1/2	HARD FIBER 80	45010	6.11
B52	1/8" x 1-1/2	RUBBER 80	45015	4.07
B52	1/8" x 1-1/2	SOFT FIBER 120	45020	6.11
B121	1/8" x 1-1/2	SOFT FIBER 80	45025	5.13
B121	1/8" x 1-1/2	HARD FIBER 80	45030	5.13
W160	1/8" x 1-1/2	SOFT FIBER 80	45035	3.56
W160	1/8" x 1-1/2	SOFT FIBER 120	45040	3.56
W163	1/8" x 1-1/2	SOFT FIBER 80	45045	4.28
W163	1/8" x 1-1/2	HARD FIBER 80	45050	4.28
W163	1/8" x 1-1/2	SOFT FIBER 120	45055	4.28
W175	1/8" x 1-1/2	SOFT FIBER 80	45060	4.03
W176	1/8" x 1-1/2	SOFT FIBER 80	45065	4.28
W177	1/8" x 1-1/2	SOFT FIBER 80	45070	5.17
W185	1/8" x 1-1/2	SOFT FIBER 80	45075	4.28
W185	1/4" x 1-1/2	SOFT FIBER 80	45080	4.28
W185	1/8" x 1-1/2	HARD FIBER 80	45085	4.28

SHAPE	SHANK DIAMETER & LENGTH	DESCRIPTION	UPC# 691019-	LIST PRICE
W185	1/8" x 1-1/2	RUBBER 80	45090	2.88
W185	1/8" x 1-1/2	SOFT FIBER 120	45100	4.28
W187	1/8" x 1-1/2	SOFT FIBER 80	45105	6.02
W187	1/4" x 1-1/2	SOFT FIBER 80	45110	6.02
W187	1/8" x 1-1/2	SOFT FIBER 120	45115	6.02
W189	1/4" x 1-1/2	RUBBER 80	45120	5.36
W205	1/4" x 1-1/2	SOFT FIBER 80	45125	7.28
W208	1/4" x 1-1/2	RUBBER 80	45130	5.46
W220	1/4" x 1-1/2	SOFT FIBER 80	45135	8.81
W220	1/4" x 1-1/2	HARD FIBER 80	45140	8.81
W220	1/4" x 1-1/2	RUBBER 80	45145	4.07
W220	1/4" x 1-1/2	SOFT FIBER 120	45150	8.81
W222	1/4" x 1	SOFT RUBBER 46	45155	6.39
W222	1/4" x 1-1/2	RUBBER 80	45160	6.39
W236	1/4" x 1-1/2	SOFT FIBER 80	45165	7.28
W242	1/4" x 1-1/2	SOFT FIBER 80	45170	14.32

### LIST PRICES OF FIBER AND RUBBER BONDED MOUNTED POINTS

SHAPE	FIBER LIST	RUBBER LIST	SHAPE	FIBER LIST	RUBBER LIST	SHAPE	FIBER LIST	RUBBER LIST	SHAPE	FIBER LIST	RUBBER LIST	SHAPE	FIBER LIST	RUBBER LIST
A1	17.88	5.97	B53	6.02	4.07	B121	5.13	3.40	W171	5.17	3.09	W209	15.34	6.39
A2	13.10	4.64	B54	6.02	3.40	B122	4.98	3.24	W172	NA	2.58	W210	NA	2.73
A3	19.89	7.21	B55	NA	3.09	B123	4.61	3.09	W173	4.03	2.58	W211	4.28	2.73
A4	16.38	5.15	B61	5.13	3.40	B124	4.61	3.09	W174	4.03	2.58	W212	4.28	2.73
A5	10.24	4.12	B62	4.61	3.24	B125	NA	3.09	W175	4.03	2.73	W213	5.12	2.88
A6	10.24	4.12	B63	NA	3.09	B131	5.43	2.78	W176	4.28	2.88	W214	NA	2.73
A11	14.84	4.64	B64	NA	3.09	B132	5.70	2.78	W177	5.17	3.09	W215	4.28	2.73
A12	10.24	3.61	B65	4.61	3.09	B133	5.70	2.58	W178	6.02	3.50	W216	4.28	2.73
A13	16.38	4.33	B70	6.11	3.24	B134	6.12	2.58	W179	6.40	4.07	W217	5.12	2.88
A14	8.75	3.24	B71	4.61	3.24	B135	5.70	2.78	W181	NA	2.58	W218	5.84	3.09
A15	7.92	4.12	B72	10.66	3.09	B136	5.70	2.58	W182	4.03	2.58	W219	7.28	3.43
A21	10.68	3.71	B73	NA	3.09				W183	4.03	2.58	W220	8.81	4.07
A22	7.64	3.09	B74	NA	3.09	W141	NA	3.09	W184	4.03	2.73	W221	11.95	5.15
A23	8.67	3.50	B81	NA	3.24	W142	NA	2.58	W185	4.28	2.88	W222	15.34	6.39
A24	6.12	3.91	B82	NA	3.09	W143	3.56	2.58	W186	5.17	3.09	W223	19.89	7.21
A25	12.38	4.12	B83	NA	3.09	W144	3.56	2.58	W187	6.02	3.50	W225	5.12	3.71
A26	8.75	3.50	B84	NA	3.09	W145	4.03	2.73	W188	7.28	4.43	W226	6.31	4.07
A31	13.73	4.64	B90	6.12	3.40	W146	4.28	2.88	W189	9.49	5.36	W227	7.28	4.07
A32	9.15	3.61	B91	6.12	4.07	W149	3.56	2.58	W190	NA	2.73	W228	9.49	4.53
A33	6.93	3.30	B92	4.61	3.09	W151	NA	2.58	W191	4.03	2.73	W229	13.39	5.15
A34	7.29	4.12	B93	4.61	3.09	W152	3.56	2.58	W192	4.03	2.73	W230	13.39	5.46
A35	5.84	3.30	B94	NA	3.09	W153	4.03	2.73	W193	4.40	2.78	W231	13.39	6.49
A36	9.97	4.22	B95	NA	3.09	W154	4.28	2.88	W194	5.17	3.24	W232	17.88	8.24
A37	5.84	3.71	B96	4.61	3.09	W157	NA	2.58	W195	6.40	3.81	W235	6.31	3.24
A38	10.66	3.91	B97	6.11	3.24	W158	3.56	2.58	W196	7.28	4.22	W236	7.28	4.33
A39	7.58	3.61	B98	NA	3.09	W159	NA	2.58	W197	11.95	5.46	W237	11.31	6.18
A40	14.06	4.84	B101	7.64	4.12	W160	3.56	2.58	W198	15.34	6.39	W238	13.39	7.21
			B102	7.64	3.61	W161	4.03	2.73	W199	NA	2.73	W239	15.34	9.27
B41	7.64	3.30	B103	6.12	3.24	W162	4.03	2.73	W200	4.28	2.73	W240	NA	10.09
B42	6.12	4.07	B104	6.12	3.24	W163	4.28	2.88	W201	4.70	2.73	W241	NA	10.30
B43	4.61	3.40	B105	NA	3.09	W164	4.40	3.09	W202	4.40	2.73	W242	14.32	8.55
B44	4.61	3.40	B106	NA	3.09	W165	NA	2.58	W203	5.17	3.24	W243	NA	9.17
B45	4.61	3.40	B111	6.12	4.07	W166	4.03	2.58	W204	6.40	3.81	W244	NA	10.09
B46	NA	3.40	B112	4.92	3.40	W167	4.03	2.58	W205	7.28	4.22	W245	NA	11.33
B47	NA	3.09	B113	4.98	3.09	W168	4.03	2.73	W206	8.60	4.33	W246	NA	12.36
B51	6.12	4.07	B114	NA	3.24	W169	4.03	2.73	W207	9.74	4.43			
B52	6.11	4.07	B115	NA	3.09	W170	4.28	2.88	W208	11.95	5.46			

## SPECIALTY MOUNTED POINTS



**MOUNTED POINTS FOR THE EX-CELL-O CENTER LAPPING MACHINE (60 DEG INCLUDED ANGLES) 1/2" X 1-1/4 SHANKS**

UPC # 691019-	SHAPE	SIZE	GRADE	LIST PRICE
30005	CL189	1/2 X 2	BLUE-GRAY 100-Q	11.00
30010	CL189	1/2 X 2	DARK BROWN 100-U	11.00
30015	CL189	1/2 X 2	BLUE-GRAY 150-Q	11.00
30020	CL189	1/2 X 2	BROWN 150-U	11.00
30025	CL189	1/2 X 2	BROWN 220-U	11.00
30030	CL197	5/8 X 2	BLUE-GRAY 60-Q	11.35
30035	CL197	5/8 X 2	DARK BROWN 80-U	11.35
30040	CL197	5/8 X 2	BROWN 150-U	11.35
30045	CL208	3/4 X 2	BLUE-GRAY 60-Q	11.35
30050	CL208	3/4 X 2	DARK BROWN 80-U	11.35
30055	CL208	3/4 X 2	BROWN 150-U	11.35
30060	CL222	1 X 2	BLUE-GRAY 60-Q	11.75
30065	CL222	1 X 2	DARK BROWN 80-U	11.75
30070	CL222	1 X 2	BROWN 150-U	11.75
30075	CL232	1-1/4 X 2	BLUE-GRAY 60-Q	13.60
30080	CL232	1-1/4 X 2	DARK BROWN 80-U	13.60
30085	CL232	1-1/4 X 2	BROWN 150-U	13.60
30090	CL239	1-1/2 X 2	DARK BROWN 60-U	14.00
30095	CL239	1-1/2 X 2	BLUE-GRAY 80-Q	14.00
30100	CL239	1-1/2 X 2	DARK BROWN 80-U	14.00
30105	CL239	1-1/2 X 2	BROWN 150-U	14.00
30110	CL244	2 X 2	DARK BROWN 80-U	17.00
30115	CL244	2 X 2	BROWN 150-U	17.00



**MOUNTED POINTS FOR PROFILE GRINDING MOUNTED ON 1/2" X 1-1/2 SHANKS**

UPC # 691019-	SHAPE	SIZE	GRADE	LIST PRICE
40005	W209	3/4 X 2-1/2	BURNT-ORANGE 60-K	8.30
40010	W209	3/4 X 2-1/2	BLUE-GRAY 60-M	8.30
40015	W224	1 X 3	BLUE-GRAY 36-K	9.60
40020	W224	1 X 3	BLACK S/C 36-L	10.95
40025	W224	1 X 3	PINK 46-K	9.60
40030	W224	1 X 3	GRAYISH-WHITE 46-M	10.50
40035	W224	1 X 3	BLUE-GRAY 60-J	9.60
40050	W224	1 X 3	PINK 80-K	9.60
40055	W241	1-1/2 X 3	WHITE 46-J	11.50
40060	W241	1-1/2 X 3	BLUE-GRAY 60-L	11.50
40065	W241	1-1/2 X 3	BLUE-GRAY 80-M	11.50
40070	W246	2 X 3	BLUE-GRAY 36-K	14.15
40075	W246	2 X 3	SALT + PEPPER 46-J	14.15
40080	W246	2 X 3	GRAYISH-WHITE 46-L	15.50
40085	W246	2 X 3	PINK 46-L	14.15
40090	W246	2 X 3	SALT + PEPPER 46-M	14.15
40095	W246	2 X 3	BLUE-GRAY 60-K	14.15
40100	W246	2 X 3	PINK 80-J	14.15
40105	W246	2 X 3	BLUE-GRAY 120-K	14.15



**MOUNTED POINTS FOR CENTER HOLE GRINDING MOUNTED ON 3/8-16 THREADED SHANKS**

UPC # 691019-	SHAPE AND SIZE	GRADE	LIST PRICE
35005	.56 X 1.19(60 DEG)	BURNT-ORANGE 60-N	11.35
35010	.56 X 1.19(60 DEG)	WHITE 60-N	11.35
35025	.56 X 1.19(60 DEG)	WHITE 120-N	11.35
35030	.56 X 1.19(60 DEG)	BLUE-GRAY 120-O	11.35
35060	1.12 X 1.19(60 DEG)	WHITE 60-N	13.00
35065	1.12 X 1.19(60 DEG)	WHITE 100-M	13.00
35075	1.12 X 1.19(60 DEG)	WHITE 120-N	13.00
35080	1.12 X 1.19(60 DEG)	BLUE-GRAY 120-O	13.00

## MOUNTED POINTS FOR JIG GRINDING

SHAPE	SIZE	GRADE	APPLICATION	LIST PRICE
W176	3/8 X 1/2	GRAYISH-WHITE 60-J	C	2.42
W176	3/8 X 1/2	GRAYISH-WHITE 60-L	A	2.42
W176	3/8 X 1/2	BLUE-GRAY 60-M	B	2.20
W176	3/8 X 1/2	GREEN 60-M	D	2.76
W176	3/8 X 1/2	BLACK 60-N	D	2.54
W176	3/8 X 1/2	WHITE 60-N	B	2.20
W176	3/8 X 1/2	BLUE-GRAY 80-L	A	2.20
W176	3/8 X 1/2	GRAYISH-WHITE 80-M	B	2.42
W185	1/2 X 1/2	GRAYISH-WHITE 60-J	C	2.42
W185	1/2 X 1/2	BLUE-GRAY 60-K	A	2.20
W185	1/2 X 1/2	WHITE 60-K	A	2.20
W185	1/2 X 1/2	GREEN 60-M	D	2.76
W185	1/2 X 1/2	GRAYISH-WHITE 60-N	B	2.42
W185	1/2 X 1/2	BLACK 60-N	D	2.54
W185	1/2 X 1/2	GRAYISH-WHITE 80-K	A	2.42
W185	1/2 X 1/2	WHITE 80-K	A	2.20
W185	1/2 X 1/2	BLUE-GRAY 80-L	A	2.20
W203	3/4 X 1/2	BLUE-GRAY 54-I	C	2.30
W203	3/4 X 1/2	GRAYISH-WHITE 60-K	A	2.54
W203	3/4 X 1/2	BLUE-GRAY 60-K	A	2.30
W203	3/4 X 1/2	GRAYISH-WHITE 60-N	B	2.54
W203	3/4 X 1/2	WHITE 60-N	B	2.30
W203	3/4 X 1/2	GRAYISH-WHITE 80-L	A	2.54
W203	3/4 X 1/2	BLACK 80-M	D	2.64
W203	3/4 X 1/2	GREEN 80-M	D	2.88
W218	1 X 1/2	BLUE-GRAY 54-I	C	2.50
W218	1 X 1/2	GRAYISH-WHITE 60-K	A	2.75
W218	1 X 1/2	BLUE-GRAY 60-K	A	2.50
W218	1 X 1/2	WHITE 60-K	A	2.50
W218	1 X 1/2	GRAYISH-WHITE 60-N	B	2.75
W218	1 X 1/2	WHITE 60-N	B	2.50
W218	1 X 1/2	WHITE 80-J	C	2.50
W218	1 X 1/2	WHITE 80-K	A	2.50
W218	1 X 1/2	GRAYISH-WHITE 80-L	A	2.75
W218	1 X 1/2	GREEN 80-M	D	3.13
W218	1 X 1/2	BLACK 80-N	D	2.88
W236	1-1/2 X 1/2	BLUE-GRAY 54-I	C	3.20
W236	1-1/2 X 1/2	GRAYISH-WHITE 60-K	A	3.52
W236	1-1/2 X 1/2	BLUE-GRAY 60-K	A	3.20
W236	1-1/2 X 1/2	WHITE 60-L	A	3.20
W236	1-1/2 X 1/2	GREEN 60-M	D	4.00
W236	1-1/2 X 1/2	BLACK 60-N	D	3.68
W236	1-1/2 X 1/2	WHITE 60-N	B	3.20
W236	1-1/2 X 1/2	WHITE 80-J	C	3.20
W236	1-1/2 X 1/2	GRAYISH-WHITE 80-K	A	3.52
W236	1-1/2 X 1/2	BLUE-GRAY 80-K	A	3.20

APPLICATION: A = GENERAL PURPOSE — WIDE RANGE  
C = OIL HARDENED STEELS

B = ROUGH GRINDING — SOFTER STEELS  
D = WEAR RESISTANT STEELS

\*UPC #s ARE FOR WHEELS MOUNTED ON 1/4" DIAMETER BY 1-1/2" LONG SHANKS. THEY ARE AVAILABLE ON THE FOLLOWING SHANKS AS WELL AT AN ADDITIONAL COST.

1/4 X 3

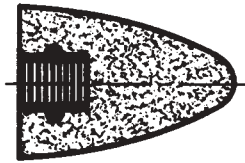
3/8 X 4 (OR SHORTER)

1/4-20 THREADED

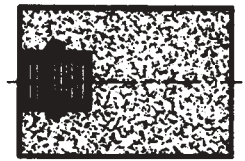
10-32 THREADED\*\*

\*\*W218 AND W236 SHAPES ARE NOT AVAILABLE ON 10-32 THREADED SHANKS.

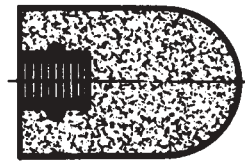
# RESIN BOND CONE AND PLUG WHEELS(10 PCS. MIN. PER ITEM) GENERAL PURPOSE, ALUMINUM OXIDE, MEDIUM HARDNESS



**TYPE 16**



**TYPE 18**



**TYPE 18R**

UPC#691019-( )	SHAPE	SIZE	INSERT	GRIT	LIST PRICE
50005	T16	1-1/2 X 2-1/2	5/8-11	20	3.40
50010	T16	1-1/2 X 2-1/2	3/8-24	24	3.40
50015	T16	1-1/2 X 3	3/8-24	16	3.71
50020	T16	1-1/2 X 3	5/8-11	16	3.71
50025	T16	1-1/2 X 3	3/8-24	24	3.71
50030	T16	1-1/2 X 3	5/8-11	24	3.71
50035	T16	1-3/4 X 3	5/8-11	16	4.08
50040	T16	1-3/4 X 3	5/8-11	24	4.08
50045	T16	2 X 3	5/8-11	16	4.08
50050	T16	2 X 3	5/8-11	24	4.08
50055	T16	2-3/4 X 3-1/2	5/8-11	16	6.15
50060	T16	2-3/4 X 3-1/2	5/8-11	24	6.15
50065	T18	1 X 2	3/8-24	24	2.33
50070	T18	1-1/2 X 2-1/2	3/8-24	16	2.89
50075	T18	1-1/2 X 2-1/2	5/8-11	16	2.89
50080	T18	1-1/2 X 2-1/2	3/8-24	20	2.89
50085	T18	1-1/2 X 2-1/2	5/8-11	24	2.89
50090	T18	1-1/2 X 3	3/8-24	16	3.23
50095	T18	1-1/2 X 3	5/8-11	16	3.23
50100	T18	1-1/2 X 3	3/8-24	24	3.23
50105	T18	1-1/2 X 3	5/8-11	24	3.23
50110	T18	2 X 2	3/8-24	20	2.55
50115	T18	2 X 2	5/8-11	20	2.55
50120	T18	2 X 3	5/8-11	16	3.56
50125	T18	2 X 3	5/8-11	24	3.56
50130	T18	2 X 4	5/8-11	20	4.41
50135	T18	3 X 3	5/8-11	16	4.89
50140	T18	3 X 4	5/8-11	20	6.05
50145	T18R	1-1/2 X 2-1/2	3/8-24	16	3.40
50150	T18R	1-1/2 X 2-1/2	5/8-11	16	3.40
50155	T18R	1-1/2 X 2-1/2	5/8-11	24	3.40
50160	T18R	1-1/2 X 3	3/8-24	16	3.71
50165	T18R	1-1/2 X 3	5/8-11	16	3.71
50170	T18R	1-1/2 X 3	3/8-24	24	3.71
50175	T18R	1-1/2 X 3	5/8-11	24	3.71
50180	T18R	2 X 3	5/8-11	16	4.08
50185	T18R	2 X 3	5/8-11	24	4.08
50190	T18R	2-3/4 X 3-1/2	5/8-11	16	6.15
50195	T18R	2-3/4 X 3-1/2	5/8-11	24	6.15
50200	T18R	3 X 3	5/8-11	16	5.40
50205	T18R	3 X 3	5/8-11	24	5.40
50210	T18R	3 X 4	5/8-11	20	6.69

RESIN BOND CONE AND PLUG WHEELS ARE PRIMARILY USED WITH PORTABLE GRINDERS FOR THE FOLLOWING.

- 1) REMOVING EXCESS WELD SEAMS
- 2)CLEANING METAL BEFORE WELDING, PAINTING OR PLATING
- 3)REMOVING PARTING LINES AND IMPERFECTIONS
- 4)SMOOTHING ROUGH CASTINGS

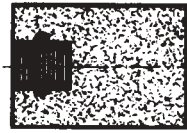
THE ABOVE ITEMS ARE THE MOST POPULAR OF THE AVAILABLE SHAPES, SIZES AND GRADES. ADDITIONAL CONES AND PLUGS ARE AVAILABLE. SEE THE FOLLOWING TWO PAGES.

# TYPE 18 PLUG WHEELS

SUGGESTED CONSUMER PRICES

RESIN BOND

SPECIALTY GRADES



TYPE 18

Diameter & Thickness	B	C	D	E	F	G
	40	150	450	750	1500	3000
1" x 1¼	3.88	3.19	2.84	2.46	1.89	1.51
	4.14	3.40	3.03	2.64	2.03	1.62
	4.78	3.93	3.50	3.04	2.33	1.86
	20	75	200	400	750	1500
2¼	5.29	4.36	3.88	3.38	2.59	2.07
2½	5.49	4.51	4.01	3.50	2.69	2.15
3	5.95	4.89	4.35	3.78	2.95	2.36
	40	250	700	1100	2500	4000
1½" x 1¼	4.14	3.39	3.02	2.63	2.01	1.61
	4.39	3.61	3.21	2.80	2.15	1.72
	4.98	4.09	3.64	3.16	2.43	1.94
	20	75	200	400	750	1500
2¼	5.61	4.63	4.12	3.59	2.74	2.19
2½	5.94	4.88	4.34	3.78	2.89	2.31
3	6.59	5.43	4.83	4.20	3.23	2.58
3¼	7.16	5.89	5.24	4.56	3.50	2.80
3½	7.49	6.15	5.47	4.76	3.65	2.92
4	8.25	6.79	6.04	5.25	4.03	3.22
	40	150	450	750	1500	3000
2" x 1¼	4.14	3.40	3.03	2.63	2.01	1.61
	4.45	3.66	3.26	2.84	2.18	1.74
	5.23	4.29	3.82	3.34	2.55	2.04
	20	75	200	400	750	1500
2¼	5.49	4.51	4.01	3.49	2.68	2.14
2½	6.39	5.25	4.67	4.08	3.13	2.50
3	7.29	6.00	5.34	4.65	3.56	2.85
3¼	7.94	6.53	5.81	5.05	3.88	3.10
3½	8.34	6.85	6.10	5.30	4.08	3.26
4	9.03	7.43	6.61	5.75	4.41	3.53
2½ x 2	6.06	4.99	4.44	3.86	2.96	2.37
	6.90	5.69	5.06	4.40	3.38	2.70
	7.49	6.15	5.47	4.76	3.65	2.92
3	8.64	7.10	6.32	5.50	4.23	3.38
3¼	9.36	7.69	6.84	5.96	4.56	3.65
3½	9.80	8.06	7.17	6.25	4.79	3.83
4	10.84	8.91	7.93	6.90	5.29	4.23
3" x 2	6.90	5.69	5.06	4.40	3.38	2.70
	7.88	6.49	5.78	5.08	3.85	3.08
	8.59	7.06	6.28	5.46	4.19	3.35
3	10.00	8.23	7.32	6.36	4.89	3.91
3¼	10.78	8.86	7.89	6.86	5.26	4.21
3½	11.29	9.29	8.27	7.19	5.51	4.41
4	12.39	10.19	9.07	7.89	6.05	4.84

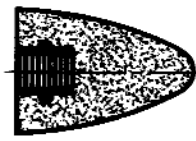
\*SEE NOTES ON PAGE 33

# TYPE 16-17-17R-18R-19-19R CONE WHEELS

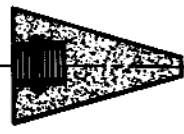
SUGGESTED CONSUMER PRICES

RESIN BOND

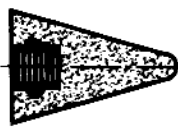
SPECIALTY GRADES



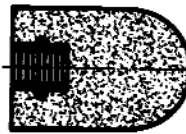
TYPE 16



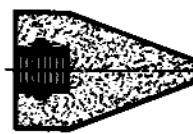
TYPE 17



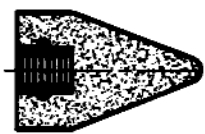
TYPE 17R



TYPE 18R



TYPE 19



TYPE 19R

Diameter & Thickness	B	C	D	E	F	G
	<b>40</b>	<b>150</b>	<b>450</b>	<b>750</b>	<b>1500</b>	<b>3000</b>
1" x 1¼	4.58	3.76	3.35	2.91	2.24	1.79
1½	4.84	3.99	3.55	3.09	2.36	1.89
2	5.49	4.51	4.01	3.49	2.68	2.14
	<b>20</b>	<b>75</b>	<b>200</b>	<b>400</b>	<b>750</b>	<b>1500</b>
2¼	6.33	5.20	4.63	4.03	3.08	2.46
2½	6.46	5.31	4.73	4.11	3.20	2.53
3	6.97	5.73	5.10	4.44	3.40	2.72
1½" x 2	5.67	4.68	4.17	3.61	2.78	2.22
2¼	6.64	5.46	4.86	4.23	3.25	2.60
2½	6.97	5.73	5.10	4.44	3.40	2.72
3	7.61	6.26	5.57	4.84	3.71	2.97
3¼	8.45	6.96	6.19	5.39	4.14	3.31
3½	8.78	7.23	6.43	5.59	4.29	3.43
4	9.56	7.85	6.99	6.08	4.66	3.73
2" x 2½	7.42	6.10	5.43	4.73	3.63	2.90
3	8.33	6.84	6.09	5.30	4.08	3.26
3¼	9.23	7.59	6.76	5.86	4.51	3.61
3½	9.62	7.91	7.04	6.13	4.69	3.75
4	10.32	8.49	7.56	6.58	5.05	4.04
2½" x 3	9.67	7.95	7.08	6.18	4.74	3.79
3¼	10.64	8.75	7.79	6.79	5.20	4.16
3½	11.09	9.13	8.13	7.06	5.43	4.34
4	12.11	9.96	8.86	7.71	5.91	4.73
3" x 3	11.04	9.09	8.09	7.04	5.40	4.32
3¼	12.06	9.93	8.84	7.68	5.89	4.71
3½	12.59	10.34	9.20	8.03	6.15	4.92
4	13.68	11.25	10.01	8.71	6.69	5.35

PRICES SHOWN APPLY TO ALUMINUM OXIDE AND COMBINATION GRAIN (CA)  
 FOR SILICON CARBIDE ADD 15% TO PRICES SHOWN  
 FOR ZIRCONIUM ADD 25% TO PRICES SHOWN  
 LESS THAN B QUANTITY PRICING ON REQUEST  
 FOR INTERMEDIATE DIAMETERS USE NEXT LARGER DIAMETER  
 THREADED INSERT (3/8-16, 3/8-24, 1/2-13 OR 5/8-11) MUST BE SPECIFIED  
 SPECIFY TIP SIZE OF T17, T17R, T19 and T19R  
 SIZES NOT SHOWN QUOTED ON REQUEST

# SHARPENING STONES

## BENCH STONES



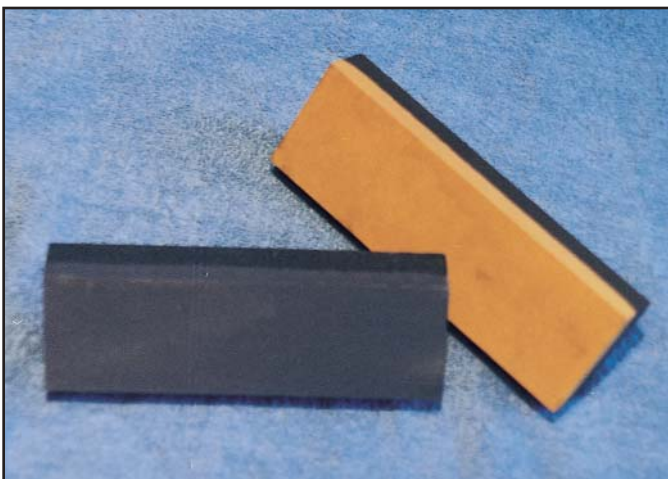
Stocked in coarse, medium and fine grit sizes, silicon carbide bench stones may be used to quickly resharpen a cutting edge, but the resulting edge will not be long lasting. (Dark grey in color)

Oil-filled aluminum oxide bench stones are inventoried in coarse, medium and fine grit sizes. Although a user will not be able to quickly resharpen a cutting edge with an aluminum oxide stone, the cutting edge finally achieved will be long lasting. (Orange/Brown in color)

Very soft natural Arkansas bench stones are the best general purpose sharpening stones. They offer a user the ability to simultaneously sharpen and polish a cutting edge. (Speckled brown in color)

Ultra-hard Arkansas bench stones are extremely dense and will enable a user to polish an already sharpened edge to a finish beyond what other stones would yield. They should not be used for general purpose sharpening. (Translucent grey in color)

Semi-hard Arkansas bench stones are flawed ultra-hard stones. The flaw in the stone will be either discoloration or slight density variation. They should be used only to polish pre-sharpened edges. (Colors vary)



## SINGLE GRIT

Product Description	List Price \$	Size (inches)	Grit/ Density	Product Number	UPC # 691019-
Silicon Carbide Bench Stones	3.78	4 x 1 x 1/4	Coarse Medium Fine	147 146 145	91010 92010 93010
	5.43	4 x 1 x 1/2	Coarse Medium Fine	292C 292M 292F	91011 92011 93011
	10.02	5 x 2 x 5/8	Medium Fine	MJB35M FJB35M	91009 92009
	12.51	6 x 2 x 1	Coarse Medium Fine	123 122 121	91008 92008 93008
	15.47	8 x 2 x 1	Coarse Medium Fine	117 116 115	91006 92006 93006
Oil-Filled Aluminum Oxide Bench Stones	3.78	4 x 1 x 1/4	Coarse Medium Fine	147A 146A 145A	94010 95010 96010
	5.43	4 x 1 x 1/2	Coarse Medium Fine	292AC 292AM 292AF	94011 95011 96011
	10.02	5 x 2 x 5/8	Medium Fine	MB35M FB35M	93009 94009
	12.51	6 x 2 x 1	Coarse Medium Fine	123A 122A 121A	94008 95008 96008
	15.47	8 x 2 x 1	Coarse Medium Fine	132 131 130	94006 95006 96006
Very Soft Arkansas Bench Stones	24.29	4 x 2 x 3/4	Very Soft	SB4B	71137
	33.08	6 x 2 x 3/4	Very Soft	SB6B	71138
	43.94	8 x 2 x 3/4	Very Soft	SB8B	71139
Semi-Hard Arkansas Bench Stones	44.72	4 x 2 x 3/4	Semi-Hard	SHB4M	71140
	66.08	6 x 2 x 3/4	Semi-Hard	SHB6M	71141
	84.93	8 x 2 x 3/4	Semi-Hard	SHB8M	71142
Ultra-Hard Arkansas Bench Stones	69.86	4 x 2 x 3/4	Ultra-Hard	HB4T	71143
	103.25	6 x 2 x 3/4	Ultra-Hard	HB6T	71144
	132.71	8 x 2 x 3/4	Ultra-Hard	HB8T	71145

When more than one grit size is necessary to resharpen a cutting edge a craftsman will often use a **combination stone** to lessen both the expense and the inconvenience of using two single grit stones. Use a silicon carbide stone for sharpening quickly or an oil-filled aluminum oxide stone for restoring a long lasting edge.

Product Description	List Price \$	Size (inches)	Grit/ Density	Product Number	UPC # 691019-
Silicon Carbide Combination Bench Stones	13.32	4 x 1 Round	Coarse and Fine	107C	91001
	8.30	4 x 1 3/4 x 5/8		112C	91004
	11.19	5 x 2 x 3/4		111C	91003
	13.32	6 x 2 x 1		109C	92001
Oil-Filled Aluminum Oxide Bench Stones	15.78	8 x 2 x 1	Coarse and Fine	108C	91002
	13.32	4 x 1 Round		107A	93001
	8.30	4 x 1 3/4 x 5/8		112A	92004
	11.19	5 x 2 x 3/4		111A	92003
	13.32	6 x 2 x 1		433	94001
	15.78	8 x 2 x 1		431	92002

# SHARPENING STONES (CONTINUED)

## TOOL ROOM FILES



Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
Silicon Carbide Half-Round Files	4.50	4 x 1/4	Coarse Medium Fine	C17 M17 F17	91429 91529 91629
	4.50	4 x 5/16	Coarse Medium Fine	C19 M19 F19	91729 91829 91929
	4.94	4 x 3/8	Coarse Medium Fine	C21 M21 F21	91431 91531 91631
	4.94	4 x 1/2	Coarse Medium Fine	C23 M23 F23	91731 91831 91931
	6.47	6 x 3/8	Coarse Medium Fine	C53 M53 F53	92132 92232 92332
	6.47	6 x 1/2	Coarse Medium Fine	C55 M55 F55	92432 92532 92632
	6.75	6 x 5/8	Coarse Medium Fine	C57 M57 F57	97034 98034 99034
	6.87	6 x 3/4	Coarse Medium Fine	C59 M59 F59	97014 98014 99014
	7.49	6 x 1	Coarse Medium Fine	C61 M61 F61	97033 98033 99033
	Oil-Filled Aluminum Oxide Half-Round Files	4.50	4 x 1/4	Coarse Medium Fine	C18 M18 F18
4.50		4 x 5/16	Coarse Medium Fine	C20 M20 F20	92429 92529 92629
4.94		4 x 3/8	Coarse Medium Fine	C22 M22 F22	92131 92231 92331
4.94		4 x 1/2	Coarse Medium Fine	C24 M24 F24	92431 92531 92631
6.47		6 x 3/8	Coarse Medium Fine	C54 M54 F54	92732 92832 92932
6.47		6 x 1/2	Coarse Medium Fine	C56 M56 F56	93132 93232 93332
6.75		6 x 5/8	Coarse Medium Fine	C58 M58 F58	91134 91234 91334
6.87		6 x 3/4	Coarse Medium Fine	C60 M60 F60	91114 91214 91314
7.49		6 x 1	Coarse Medium Fine	C62 M62 F62	91133 91233 91333



**Squares and triangles** have both flat sides and long, sharp edges. They are the most popular types of tool room files. Choose both the material and the grit size to arrive at the desired finish in the time allowed. Choose the shape and size that will give you the snugest fit to the surface being honed.



Both **rounds and half-rounds** offer curved faces to give the user the ability to hone instruments with contoured surfaces. Half-rounds have the extra dimension of a flat side. The denser the material a round or a half-round is made from the better the finish it can offer the user, but the longer it will take him to achieve it.




Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
Silicon Carbide Square Files	3.38	4 x 1/4	Coarse Medium Fine	C1 M1 F1	91028 92028 93028
	3.38	4 x 5/16	Coarse Medium Fine	C3 M3 F3	94028 95028 96028
	3.38	4 x 3/8	Coarse Medium Fine	C5 M5 F5	97028 98028 99028
	3.38	4 x 1/2	Coarse Medium Fine	C7 M7 F7	91128 91228 91328
	5.64	6 x 3/8	Coarse Medium Fine	C33 M33 F33	91030 92030 93030
	5.64	6 x 1/2	Coarse Medium Fine	C35 M35 F35	94030 95030 96030
	6.05	6 x 5/8	Coarse Medium Fine	C37 M37 F37	91013 92013 93013
	6.05	6 x 3/4	Coarse Medium Fine	C39 M39 F39	94013 95013 96013
	6.47	6 x 1	Coarse Medium Fine	C41 M41 F41	91032 92032 93032
	Oil-Filled Aluminum Oxide Square Files	3.38	4 x 1/4	Coarse Medium Fine	C2 M2 F2
3.38		4 x 5/16	Coarse Medium Fine	C4 M4 F4	91728 91828 91928
3.38		4 x 3/8	Coarse Medium Fine	C6 M6 F6	92128 92228 92328
3.38		4 x 1/2	Coarse Medium Fine	C8 M8 F8	92428 92528 92628
5.64		6 x 3/8	Coarse Medium Fine	C34 M34 F34	97030 98030 99030
5.64		6 x 1/2	Coarse Medium Fine	C36 M36 F36	91130 91230 91330
6.05		6 x 5/8	Coarse Medium Fine	C38 M38 F38	97013 98013 99013
6.05		6 x 3/4	Coarse Medium Fine	C40 M40 F40	91113 91213 91313
6.47		6 x 1	Coarse Medium Fine	C42 M42 F42	94032 95032 96032
Semi-Hard Arkansas Square Files		7.62 8.18 10.61	3 X 1/4 3 X 3/8 3 X 1/2	Semi-Hard Semi-Hard Semi-Hard	SHF13M SHF33M SHF43M
Ultra-Hard Arkansas Square Files	9.56 10.26 13.29	3 X 1/4 3 X 3/8 3 X 1/2	Ultra-Hard Ultra-Hard Ultra-Hard	HF13T HF33T HF43T	71101 71102 71103

# SHARPENING STONES (CONTINUED)

## TOOL ROOM FILES (CONTINUED)

Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
 Silicon Carbide Triangular Files	4.50	4 x 1/4	Coarse Medium Fine	C9 M9 F9	91029 92029 93029
	4.50	4 x 5/16	Coarse Medium Fine	C11 M11 F11	94029 95029 96029
	4.94	4 x 3/8	Coarse Medium Fine	C13 M13 F13	91031 92031 93031
	4.94	4 x 1/2	Coarse Medium Fine	C15 M15 F15	94031 95031 96031
	6.47	6 x 3/8	Coarse Medium Fine	C43 M43 F43	97032 98032 99032
	6.47	6 x 1/2	Coarse Medium Fine	C45 M45 F45	91132 91232 91332
	6.75	6 x 5/8	Coarse Medium Fine	C47 M47 F47	91034 92034 93034
	6.87	6 x 3/4	Coarse Medium Fine	C49 M49 F49	91014 92014 93014
	7.49	6 x 1	Coarse Medium Fine	C51 M51 F51	91033 92033 93033
 Oil-Filled Aluminum Oxide Triangular Files	4.50	4 x 1/4	Coarse Medium Fine	C10 M10 F10	97029 98029 99029
	4.50	4 x 5/16	Coarse Medium Fine	C12 M12 F12	91129 91229 91329
	4.94	4 x 3/8	Coarse Medium Fine	C14 M14 F14	97031 98031 99031
	4.94	4 x 1/2	Coarse Medium Fine	C16 M16 F16	91131 91231 91331
	6.47	6 x 3/8	Coarse Medium Fine	C44 M44 F44	91432 91532 91632
	6.47	6 x 1/2	Coarse Medium Fine	C46 M46 F46	91732 91832 91932
	6.75	6 x 5/8	Coarse Medium Fine	C48 M48 F48	94034 95034 96034
	6.87	6 x 3/4	Coarse Medium Fine	C50 M50 F50	94014 95014 96014
	7.49	6 x 1	Coarse Medium Fine	C52 M52 F52	94033 95033 96033
Semi-Hard Arkansas Triangles	7.62 8.18 10.61	3 X 1/4 3 X 3/8 3 X 1/2	Semi-Hard Semi-Hard Semi-Hard	SHF113M SHF133M SHF143T	72104 72105 72106
Ultra-Hard Arkansas Triangles	9.56 10.26 13.29	3 X 1/4 3 X 3/8 3 X 1/2	Ultra-Hard Ultra-Hard Ultra-Hard	HF113T HF133T HF143T	72101 72102 72103
Oil-Filled Aluminum Oxide Tapered Triangles	7.28	4 x 1/2-1/4	Coarse Medium Fine	339A 338A 337A	91025 92025 93025

Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
 Silicon Carbide Round Files	5.64	4 x 1/4	Coarse Medium Fine	C25 M25 F25	91430 91530 91630
	5.64	4 x 5/16	Coarse Medium Fine	C27 M27 F27	91730 91830 91930
	6.05	4 x 3/8	Coarse Medium Fine	C29 M29 F29	91413 91513 91613
	6.05	4 x 1/2	Coarse Medium Fine	C31 M31 F31	91713 91813 91913
	7.49	6 x 3/8	Coarse Medium Fine	C63 M63 F63	91433 91533 91633
	7.49	6 x 1/2	Coarse Medium Fine	C65 M65 F65	91733 91833 91933
	8.00	6 x 5/8	Coarse Medium Fine	C67 M67 F67	91026 92026 93026
	8.00	6 x 3/4	Coarse Medium Fine	C69 M69 F69	94026 95026 96026
	8.30	6 x 1	Coarse Medium Fine	C71 M71 F71	93004 94004 95004
	 Oil-Filled Aluminum Oxide Round Files	5.64	4 x 1/4	Coarse Medium Fine	C26 M26 F26
5.64		4 x 5/16	Coarse Medium Fine	C28 M28 F28	92430 92530 92630
6.05		4 x 3/8	Coarse Medium Fine	C30 M30 F30	92113 92213 92313
6.05		4 x 1/2	Coarse Medium Fine	C32 M32 F32	92413 92513 92613
7.49		6 x 3/8	Coarse Medium Fine	C64 M64 F64	92133 92233 92333
7.49		6 x 1/2	Coarse Medium Fine	C66 M66 F66	92433 92533 92633
8.00		6 x 5/8	Coarse Medium Fine	C68 M68 F68	97026 98026 99026
8.00		6 x 3/4	Coarse Medium Fine	C70 M70 F70	91126 91226 91326
8.30		6 x 1	Coarse Medium Fine	C72 M72 F72	96004 97004 98004
Semi-Hard Arkansas Round Files		9.27 9.56 12.89	3 X 1/4 3 X 3/8 3 X 1/2	Semi-Hard Semi-Hard Semi-Hard	SHF813M SHF803M SHF883M
Ultra-Hard Arkansas Round File	14.78	3 X 1/4	Ultra-Hard	HF813T	71115
Oil-Filled Aluminum Oxide Tapered Rounds	7.28	4 x 1/2-1/4	Coarse Medium Fine	336A 335A 334A	94025 95025 96025

	<b>Point files</b> have both sharp points for use by engravers and die sinkers and round surfaces for resharpening contoured faces.	Oil-Filled Aluminum Oxide Points	8.00	3 X 5/16 Base	Coarse Medium Fine	99A 98A 97A	91426 91526 91626
	<b>Diamond files</b> are widely used on machine parts for cleaning and polishing non-right angles. They are thicker, easier to handle and offer different angles than do bevel files.	Oil-Filled Aluminum Oxide Diamond Files	8.30	4 X 9/16 X 3/16	Coarse Medium Fine	342A 341A 340A	99004 91104 91204
	<b>Knife blades</b> are primarily used to resharpen both the edges and the points of cutting tools. The long, thin edge also makes a knife blade the preferred choice for deburring the edges of tightly spaced groove fittings.	Oil-Filled Aluminum Oxide Knife Blades	6.35	4 X 1 X 1/8 Back	Coarse Medium Fine	31AC 31AM 31AF	91016 92016 93016

# SHARPENING STONES (CONTINUED)

## SPECIALTY FILES AND STONES



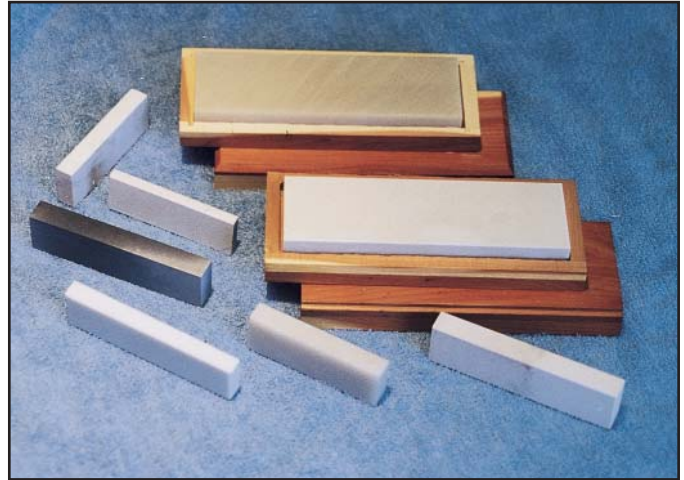
### ARKANSAS FILES

**Flat files** offer the user two good sized polishing surfaces in as small, thin and hard a stone medium that there is available as a standard size. **Bevel files** have the same polishing surfaces as flat files, but also have both acute and obtuse angles at the edges. They are widely used to repolish the edges and angles of machine parts. **Diamond files** are widely used on machine parts for cleaning and polishing non-right angles. They are thicker, easier to handle and offer different angles than do bevel files. The unusual shape of an **oval file** enables an artisan to polish the elliptical recesses and curved edges of exacting instruments. **Point files** have both sharp points for use by engravers and die sinkers and round surfaces for reshaping contoured faces. **Knife blades** are primarily used to resharpen both the edges and the points of cutting tools. The long, thin edge also makes a knife blade the preferred choice for deburring the edges of tightly spaced groove fittings.

Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
Semi-Hard Arkansas Flat	10.89	3 x 3/8 x 1/8	Semi-Hard	SHF823M	71109
Ultra-Hard Arkansas Flat	15.15	3 x 3/8 x 1/8	Ultra-Hard	HF823T	71116
Semi-Hard Arkansas Bevel	7.88	3 x 3/8 x 1/8	Semi-Hard	SHF833M	71110
Ultra-Hard Arkansas Bevel	9.87	3 x 3/8 x 1/8	Ultra-Hard	HF833T	71117
Semi-Hard Arkansas Diamond File	14.24	3 x 1/2 x 3/16	Semi-Hard	SHF843M	71111
Ultra-Hard Arkansas Diamond File	17.84	3 x 1/2 x 3/16	Ultra-Hard	HF843T	71118
Semi-Hard Arkansas Oval	12.12	3 x 1/2 x 3/16	Semi-Hard	SHF853M	71112
Ultra-Hard Arkansas Oval	15.15	3 x 1/2 x 3/16	Ultra-Hard	HF853T	72116
Semi-Hard Arkansas Point	14.24	3 X 1/4 Base	Semi-Hard	SHF863M	72111
Ultra-Hard Arkansas Point	17.84	3 X 1/4 Base	Ultra-Hard	HF863T	72118
Semi-Hard Arkansas Knife	12.57	3 x 3/4 x 1/8 Back	Semi-Hard	SHF873M	71113
Ultra-Hard Arkansas Knife	15.74	3 x 3/4 x 1/8 Back	Ultra-Hard	HF873T	71119

Although **reamer stones** are used primarily to restore sharp edges on reamers, they are also used frequently on taps and dies.

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Oil-Filled Aluminum Oxide Reamer Stones	4.73	3 1/2 x 3/4 x 3/16	Medium Fine	MT123M FT123M	91015 92015
	5.13	4 1/2 x 1 x 5/16	Medium Fine	294AM 294AF	91027 92027
	5.64	5 x 1 x 3/16	Medium Fine	MT125M FT125M	92730 92830
	7.28	6 x 1 x 1/4	Medium Fine	MT126M FT126M	97025 98025



**Penknife pieces** are very long lasting general purpose edge restorers. They are typically used to polish presharpended edges to a razor sharp finish. Very soft Arkansas stones will complete the job the fastest and ultra-hard Arkansas stones will yield the longest lasting edge. **Jewelers stones** are used for the precision sharpening of fine cutting tools. Jewelers, engravers and artisans use these stones when penknife pieces are too short.

Product Description	List Price \$	Size (inches)	Density	Product Number	UPC # 691019-
Very Soft Arkansas Penknife Pieces	5.64	3 x 1 x 3/8	Very Soft	SB13B	71131
	6.26	4 x 1 x 3/8		SB14B	71132
Semi-Hard Arkansas Penknife Pieces	9.92	3 x 1 x 3/8	Semi-Hard	SHB13M	71133
	11.87	4 x 1 x 3/8		SHB14M	71134
Ultra-Hard Arkansas Penknife Pieces	16.55	3 x 1 x 3/8	Ultra-Hard	HB13T	71135
	19.85	4 x 1 x 3/8		HB14T	71136
Semi-Hard Arkansas Jewelers	29.15	4 x 2 x 3/8	Semi-Hard	SHB24M	71127
	42.12	6 x 2 x 3/8		SHB26M	71128
Ultra-Hard Arkansas Jewelers	45.54	4 x 2 x 3/8	Ultra-Hard	HB24T	71129
	65.81	6 x 2 x 3/8		HB26T	71130

**Jointer stones** are typically fitted into fixtures. They are the preferred tool for restoring and maintaining the cutting edges of the mechanical jointing devices on automatic planers.

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Silicon Carbide Jointer Stones	3.38	4 x 3/4 x 1/4	Medium	389	92728
	3.38	4 x 3/4 x 5/16	Medium	392	92828
	4.50	4 x 3/4 x 3/8	Medium	390	92729
	4.50	4 x 3/4 x 1/2	Medium	373	92829
	6.47	4 x 3/4 x 3/4	Medium	391	93432
Oil-Filled Aluminum Oxide Jointer Stones	3.38	4 x 3/4 x 1/4	Coarse	425	92928
	3.38	4 x 3/4 x 5/16	Coarse	428	93128
	4.50	4 x 3/4 x 3/8	Coarse	426	92929
	4.50	4 x 3/4 x 1/2	Coarse	438	93129
	6.47	4 x 3/4 x 3/4	Coarse	440	93532



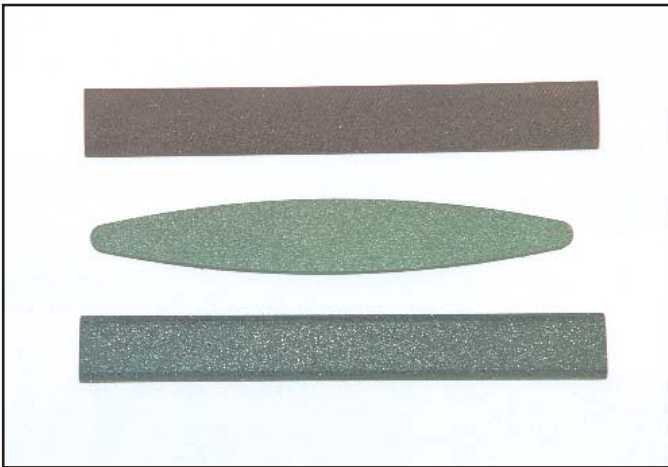
# SHARPENING STONES (CONTINUED)

## SPECIALTY FILES AND STONES (CONTINUED)



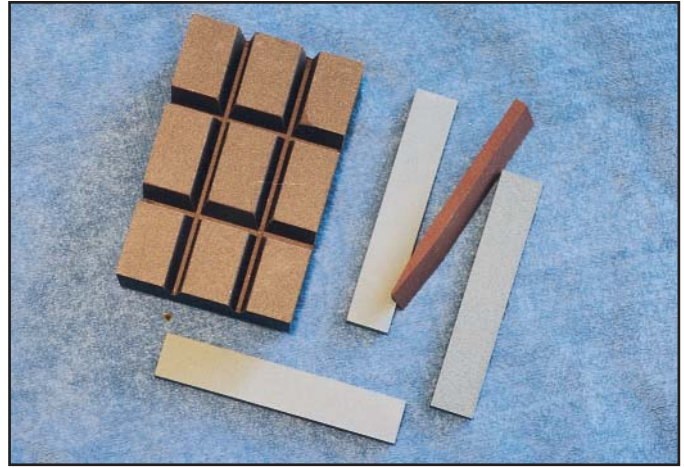
The **machine knife stone** is a fast cutting silicon carbide combination stone with a finger protection groove that enables the craftsman to safely resharpen machine mounted knives. It is also frequently used by metal workers to clean and flatten their tables. The **gouge sharpening stone** is the favorite sharpening and lapping tool of gouge users and other cutting tool users who must hone both inside and outside curved surfaces, due to its unusual shape and its composure of long lasting oil-filled aluminum oxide. The silicon carbide **utility file** will outlast and outsharpen virtually any metal file. Its tapered shape and long reach make it a favorite for sharpening coarse edges on cutting tools. It is also frequently used to resharpen tire stripping spikes.

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Machine Knife Stone	14.71	4 Diam x 1 1/2 Thick	Coarse and Fine	289	91024
Gouge Sharpening Stone	12.30	6 x 2 x 1 x 1/2 - 7/16	Fine	15	91017
Silicon Carbide Utility File	11.19	14 overall	Coarse	57	93003



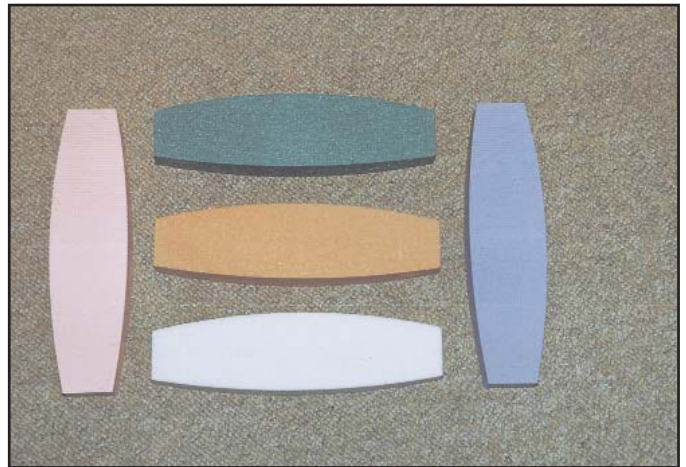
The aluminum oxide **scythestone** will produce a long lasting edge on sickles, scythes and brush hooks. It is typically used between jobs so that upon the next use of the edge resharpening will not be required as quickly. The silicon carbide **sickle and scythestone** is used to quickly restore the edges of sickles, scythes and brush-hooks. It is often used while on the job. The **garden tool sharpener** is made from very fast cutting green silicon carbide abrasive and is relatively new to the industrial marketplace. Consumers have for years found the elliptical shape comfortable for stoning both flat and curved cutting edges.

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Aluminum Oxide Scythestone	3.50	10 x 1 5/16 x 9/16-3/16	Coarse	188	91021
Garden Tool Sharpener	5.13	9 1/2 x 1 3/8 x 1/2	Medium	198	93027
Sickle and Scythestone	4.20	10 x 1 1/4 x 3/4	Coarse	192	91022



Aluminum oxide **griddle bricks** have a long history of quickly cleaning restaurant griddles without requiring frequent replacement and without leaving contamination. The design of the **skiving knife stone** has inspired many uses, but this oil-filled aluminum oxide stone is still used mostly by mechanics and machinists for deburring and sharpening Amazeen skiving knives. **Carbide tool slips** are typically used while on the job to maintain the edges of carbide tools. Made from fast cutting green silicon carbide they help to minimize tool regrinding costs.

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Griddle Brick	15.24	4 1/2 x 3 x 2	Medium	217	91023
Skiving Knife Stone	6.05	4 x 1 x 1/4	Fine	296F	92713
Green Silicon Carbide Slips For Carbide Tools	3.12	4 1/4 x 3/4 x 3/8	Coarse	39	91018
		4 1/4 x 3/4 x 3/8	Medium	38	92018
		4 1/4 x 3/4 x 3/8	Fine	37	93018
	8.30	Set of 3 slips 1 of each grit	Assorted	33	95000

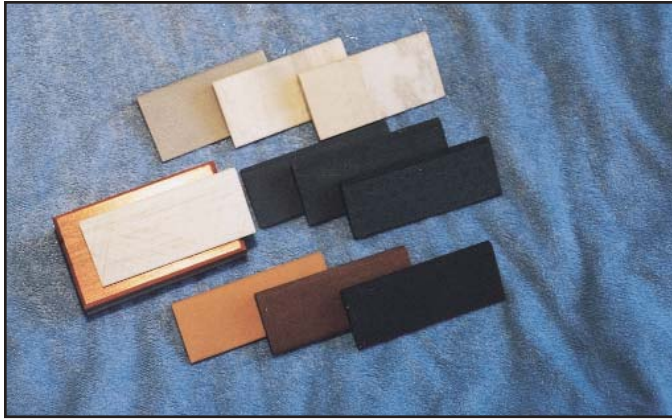


The unique shape of **boat rubs** allows them to fit easily into machinists' hands. They are very popular for the initial removal of large die seams and for breaking down sharp edges on machined parts. They are available in many grades. The five most popular grades are shown in this catalog.

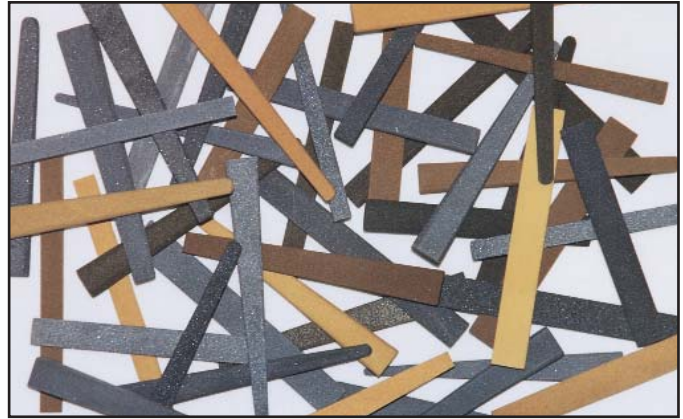
Product Description	List Price \$	Size (inches)	Grade	Product Number	UPC # 691019-
Molded Boat Rub	12.49	1 1/2 x 2 3/8 x 9	WA60I	BRWE60I	81043
Molded Boat Rub	12.49	1 1/2 x 2 3/8 x 9	WA120I	BRWR120I	82043
Molded Boat Rub	15.00	1 1/2 x 2 3/8 x 9	GC80I	BRGC80I	81046
Molded Boat Rub	14.44	1 1/2 x 2 3/8 x 9	C60H	BRCC60H	81045
Molded Boat Rub	14.44	1 1/2 x 2 3/8 x 9	C36H	BRCC36H	82045

# SHARPENING STONES (CONTINUED)

## SLIP STONES AND SILVERSMITHS' STONES



Round edge slip stones have no sharp edges and are very comfortable to a user's hand. They are used mostly by wood carvers for gouge sharpening. They are also used for resharpening curved knives and tools, molder's knives and bead planers.

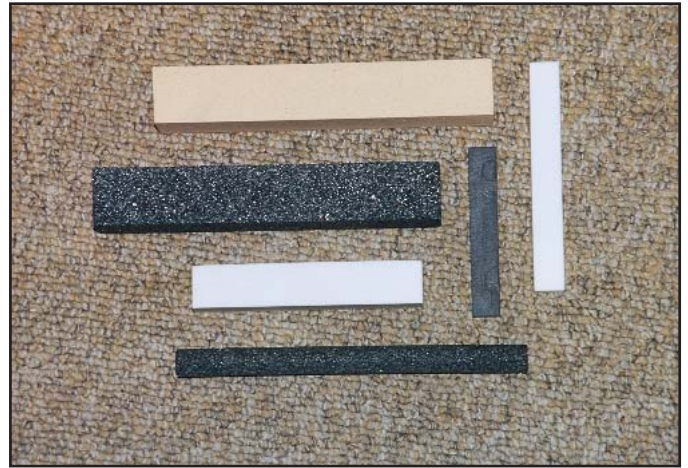


The unique shapes of silversmiths' stones are designed for metal workers to use when touching up special instruments, cleaning tools and dies and for honing to close tolerances.

Product Description	List Price \$	Size (inches)	Grit/Density	Product Number	UPC # 691019-
Silicon Carbide Round Edge Slip Stones	12.21	6 x 2 1/4 x 3/4-3/8	Coarse	176C	91012
			Medium	175C	92012
			Fine	174C	93012
	6.05	4 1/2 x 1 3/4 x 1/4-1/16	Coarse	179C	92813
			Medium	178C	92913
			Fine	177C	93113
	8.30	4 1/2 x 2 1/8 x 5/8-5/16	Coarse	182C	91304
			Medium	181C	91404
			Fine	180C	91504
	6.05	4 1/2 x 1 3/4 x 1/2-3/16	Coarse	185C	93213
			Medium	184C	93313
			Fine	183C	93413
4.73	4 x 1 x 7/16-3/16	Coarse	189C	93015	
		Medium	187C	94015	
		Fine	186C	95015	
6.05	5 x 1 x 5/16-3/32	Coarse	293CC	93513	
		Medium	293CM	93613	
		Fine	293CF	93713	
6.05	4 1/2 x 1 3/4 x 3/8-1/8	Coarse	446CC	93813	
		Medium	446CM	93913	
		Fine	446CF	94113	
Oil-Filled Aluminum Oxide Round Edge Slip Stones	12.21	6 x 2 1/4 x 3/4-3/8	Coarse	176A	94012
			Medium	175A	95012
			Fine	174A	96012
	6.05	4 1/2 x 1 3/4 x 1/4-1/16	Coarse	179A	94213
			Medium	178A	94313
			Fine	177A	94413
	8.30	4 1/2 x 2 1/8 x 5/8-5/16	Coarse	182A	91604
			Medium	181A	91704
			Fine	180A	91804
	6.05	4 1/2 x 1 3/4 x 1/2-3/16	Coarse	185A	94513
			Medium	184A	94613
			Fine	183A	94713
4.73	4 x 1 x 7/16-3/16	Coarse	189A	96015	
		Medium	187A	97015	
		Fine	186A	98015	
6.05	5 x 1 x 5/16-3/32	Coarse	293AC	94813	
		Medium	293AM	94913	
		Fine	293AF	95113	
6.05	4 1/2 x 1 3/4 x 3/8-1/8	Coarse	446AC	95213	
		Medium	446AM	95313	
		Fine	446AF	95413	
Very Soft Arkansas Slip	11.00	4 x 1 3/4 x 3/8-1/8	Very Soft	SS4B	71120
Semi-Hard Arkansas Round Edge Slip Stones	18.02	3 x 1 3/4 x 1/4-1/16	Semi-Hard	SHS3M	71121
	29.30	4 x 1 3/4 x 3/8-1/8	Semi-Hard	SHS4M	71122
	16.68	4 x 1 1/4 x 1/4-1/8	Semi-Hard	SHS14M	71123
	33.14	4 1/2 x 2 x 1/2	Semi-Hard	SHF893M	71114
Ultra-Hard Arkansas Slip Stones	28.11	3 x 1 3/4 x 1/4-1/16	Ultra-Hard	HS3T	71124
	45.83	4 x 1 3/4 x 3/8-1/8	Ultra-Hard	HS4T	71125
	26.07	4 x 1 1/4 x 1/4-1/8	Ultra-Hard	HS14T	71126

Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019-
Silicon Carbide	7.28	4 x 1/2 x 1/16 Flat	Coarse	302C	99025
			Medium	301C	91125
			Fine	300C	91225
Silver-Smiths' Stones	7.28	4 x 1/2-1/4 x 5/16-1/8 Flat Double Tapered	Coarse	305C	91325
			Medium	304C	91425
			Fine	303C	91525
Silicon Carbide	7.28	4 x 5/16 x 3/16-1/16 Flat Tapered	Coarse	308C	91625
			Medium	307C	91725
			Fine	306C	91825
Silver-Smiths' Stones	7.28	4 x 1/2-1/4 x 5/16-1/16 Oval Double Tapered	Coarse	311C	91925
			Medium	310C	92125
			Fine	309C	92225
Silver-Smiths' Stones	7.28	4 x 1/2-3/16 x 3/16-1/16 Oval Double Tapered	Coarse	314C	92325
			Medium	313C	92425
			Fine	312C	92525
Silver-Smiths' Stones	7.28	4 x 3/8-3/16 x 1/8-1/16 Oval Double Tapered	Coarse	317C	92625
			Medium	316C	92725
			Fine	315C	92825
Silver-Smiths' Stones	7.28	4 x 7/16 x 3/16-1/8 Oval, Flat Tapered Sides	Coarse	320C	92925
			Medium	319C	93125
			Fine	318C	93225
Silver-Smiths' Stones	7.28	3 1/2 x 7/16 x 3/16 Oval	Coarse	323C	93325
			Medium	322C	93425
			Fine	321C	93525
Oil-Filled Aluminum Oxide	7.28	4 x 1/2 x 1/16 Flat	Coarse	302A	93625
			Medium	301A	93725
			Fine	300A	93825
Silver-Smiths' Stones	7.28	4 x 1/2-1/4 x 5/16-1/8 Flat Double Tapered	Coarse	305A	93925
			Medium	304A	94125
			Fine	303A	94225
Oil-Filled Aluminum Oxide	7.28	4 x 5/16 x 3/16-1/16 Flat Tapered	Coarse	308A	94325
			Medium	307A	94425
			Fine	306A	94525
Silver-Smiths' Stones	7.28	4 x 1/2-1/4 x 5/16-1/16 Oval Double Tapered	Coarse	311A	94625
			Medium	310A	94725
			Fine	309A	94825
Silver-Smiths' Stones	7.28	4 x 1/2-3/16 x 3/16-1/16 Oval Double Tapered	Coarse	314A	94925
			Medium	313A	95125
			Fine	312A	95225
Silver-Smiths' Stones	7.28	4 x 3/8-3/16 x 1/8-1/16 Oval Double Tapered	Coarse	317A	95325
			Medium	316A	95425
			Fine	315A	95525
Silver-Smiths' Stones	7.28	4 x 7/16 x 3/16-1/8 Oval, Flat Tapered Sides	Coarse	320A	95625
			Medium	319A	95725
			Fine	318A	95825
Silver-Smiths' Stones	7.28	3 1/2 x 7/16 x 3/16 Oval	Coarse	323A	95925
			Medium	322A	96125
			Fine	321A	96225

# HAND RUBS, FLOOR RUBS AND DRESSING STICKS



Product Description	List Price \$	Size (inches)	Grit	Product Number	UPC # 691019
Silicon Carbide Plain Hand Rubbing Bricks	3.44	4 x 2 x 1/2	C24R	HR200	81047
	3.71	4 x 2 x 1	C24R	HR201	81048
	6.18	4 x 2 x 2	C24R	HR202	81049
	10.64	4 x 3 x 2	C24R	HR203	81050
	5.01	6 x 2 x 1/2	C24R	HR204	81051
	5.46	6 x 2 x 1	C24R	HR211	81052
	8.29	6 x 2 x 2	C24R	HR213	81053
	13.64	6 x 3 x 2	C24R	HR214	81054
	19.43	6 x 3 x 3	C24R	HR215	81055
	6.18	8 x 2 x 1	C24R	HR222	82049
	10.73	8 x 2 x 2	C24R	HR225	81056
	18.34	8 x 3 x 2	C24R	HR226	81057
	22.16	8 x 4 x 2	C24R	HR227	81058
27.11	8 x 3 x 3	C24R	HR228	81059	
30.10	8 x 4 x 3	C24R	HR229	81060	
Silicon Carbide Fluted Hand Rubbing Bricks	6.18	4 x 2 x 2	C24R	HR240	83049
	8.29	6 x 2 x 2	C24R	HR241	82053
	10.73	8 x 2 x 2	C24R	HR242	82056
	29.38	8 x 3 x 3	C24R	HR243	81061
Silicon Carbide Fluted Hand Rubbing Bricks with Handles	17.81	8 x 3 1/2 x 1 1/2	C24R	HR250	81062
	14.06	6 x 3 x 1	C24R	HR252	81063
Silicon Carbide Flat Rub Brick with Handle	17.81	8 x 3 1/2 x 3/4	C24R	HR275	82062
Silicon Carbide Floor Rubs	5.46	2 5/8 x 2 x 2	C10Q	FR521SCC10Q4	82052
		2 5/8 x 2 x 2	C24T	FR521SCC24T	83052
		2 5/8 x 2 x 2	C46R	FR521SCC46R	84052
		2 5/8 x 2 x 2	C80S	FR521SCC80S	85052
		2 5/8 x 2 x 2	C120Q	FR521SCC120Q	86052
	6.18	4 x 2 x 2	C10Q	BBDC10Q4	84049
		4 x 2 x 2	C16S	BBDC16S	85049
		4 x 2 x 2	C46T	BBDC46T	86049
		4 x 2 x 2	C80Q	BBDC80Q	87049
		4 x 2 x 2	C120Q	BBDC120Q	88049
Silicon Carbide Floor Rubs with One Parting Seam	10.73	8 x 2 x 2	C10Q	FR521CC10Q4	83056
		8 x 2 x 2	C16T	FR521CC16T	84056
		8 x 2 x 2	C24R	FR521CC24R	85056
		8 x 2 x 2	C46R	FR521CC46R	86056
		8 x 2 x 2	C80Q	FR521CC80Q	87056
Wood Wedge	.29	4 x 3/4 x 3/4-1/4	—	wedge	91005

Product Description	List Price \$	Size (inches)	Specification	Product Number	UPC # 691019
Boron Carbide Dressing Sticks	39.09	3/16 x 1/2 x 3	Boron Carbide	BC1	91019
	32.40	3/16 x 1/2 x 2	Boron Carbide	BC2	91020
Vitrified Aluminum Oxide Dressing Sticks	2.66	1/2 x 1/2 x 4	WA220-HVW4	A2A2DWE220H	81064
	3.20	1/2 x 1/2 x 6	WA150-IVW4	A2A2FWE150I	81035
	3.20		WA220-HVW4	A2A2FWE220H	82035
	6.72		WA320-HVW4	A2A2FWE320H	81036
	3.36	3/4 x 3/4 x 4	WA60-LVW4	C4C4DWE60L	81037
	3.36		WA80-LVW4	C4C4DWE80L	82037
	3.68		WA150-HVW4	349	81070
	3.36		WA150-IVW4	C4C4DWE150I	83037
	3.36		WA240-HVW4	C4C4DWE240H	84037
	5.32	3/4 x 3/4 x 8	WA220-HVW4	C4C4HWE220H	81065
	6.00	1 x 1 x 6	WA150-GVW4	AAFWE150G	81038
	6.00		WA150-HVSR	AAFWR150H	82038
	6.00		WA1502-HVW4	AAFWE1502H	83038
	6.00		WA150-IVW4	AAFWE150I	84038
	6.00		WA220-HVW4	AAFWE220H	85038
6.00	WA240-HVW4		AAFWE240H	86038	
9.72	WA320-HVSR		AAFWR320H	81039	
7.42	1 x 1 x 8	WA150-HVW4	AAHWE150H	81040	
7.42		WA240-HVW4	AAHWE240H	82040	
16.88		WA3202-HVW4	AAHWE3202H	81041	
18.04	2 x 2 x 8	WA46-HVW4	BBHWE46H	81042	
		WA80-HVW4	BBHWE80H	82042	
Vitrified Silicon Carbide Dressing Sticks	3.58	1/2 x 1/2 x 6	C24-SVAC	A2A2FCC24S	81044
	3.58		C80-MVS	A2A2FCC80M	82044
	3.58		C150-KVS	A2A2FCC150K	83044
	3.58		C150-MVS	A2A2FCC150M	84044
	3.58		C220-KVS	A2A2FCC220K	85044
	7.12		GC320-KVS	A2A2FGC320K	81068
	4.94	3/4 x 3/4 x 6	C20-RVAC	C4C4FCC20R	81071
			C120-MVS	C4C4FCC120M	82071
	4.57	1 x 1 x 6	C16-SVAC	AAFCC16S	83069
	4.57		C20-UVAC	AAFCC20U	82069
	4.57		C24-SVAC	347	81069
	6.72		C46-QVAC	AAFCC46Q	81072
	6.72		C80-MVS	AAFCC80M	82072
6.72	C80-PVAC		AAFCC80P	83072	
6.72	C150-HVS		AAFCC150H	84072	
6.72	C150-MVS		AAFCC150M	85072	
6.72	C180-PVS		AAFCC180P	86072	
17.75	C320-JVS		AAFCC320J	81073	
17.75	C320-KVS	AAFCC320K	82073		
8.39	1 x 1 x 8	C16-UVAC	AAHCC16U	82067	
		C24-SVAC	345	81067	
10.73	2 x 2 x 8	C10-QVS	BBHCC10Q4	88056	
Truing Stick	4.46	6 x 1/2" round	C24	56	81066
Wheel Dresser	26.80	10 overall	—	H6M	91007

## FINISHING STONES

- DIEMAKER (DM):** The most popular type of finishing stones, Diemaker stones, are fast cutting and break down at a moderate rate. They are suitable for general purpose stoning on most varieties of steel and do not load when used on harder steels.  
Blue to Tan
- EDM (EDM):** These stones have been specially designed to quickly remove the scale left behind in the Electrical Discharge Machining process.  
Red to Salmon
- EDM+(EM+):** These EDM stones have been treated with resin to improve their form holding ability after having been shaped. The resin also improves the finish to better than expected for the grit size.  
Brown
- GENERAL (GP):** For general purpose mold and die finishing of soft to medium steels, these semi-hard polishing stones are more resistant to load than are Diemaker stones.  
White
- OIL-FILLED (OT):** Due to their added lubricity, these very hard stones have been successfully used to stone soft metals. Their hardness makes them good for finishing ribs, slots and other hard-to-reach areas.  
Ivory
- RUBY (RU):** These very soft, easily shaped stones will never load. They are the best choice for finishing exceptionally soft metals such as aluminum, stainless steel, copper, brass and kirksite.  
Pink
- MOLDMAKER:** These silicon carbide stones break down quickly to avoid loading and are best suited for finishing softer grades of steel. They are harder than RU stones, but softer than GP stones. The silicon carbide grain is well known for leaving a satin finish.  
Gray (M)
- MOLDMAKER+:** Although not well suited for finishing softer grades of steel, these stones will still leave a satin finish on medium grades of steel where aluminum oxide stones will not. They are better suited for shaping than Moldmaker stones.  
Gray (M+)
- ROUGH OUT (RO):** These medium hardness aluminum oxide stones are used to remove deep scratches and tool marks prior to finishing. Resistant to load, they are color coded to aid in distinguishing their grit sizes.  
Color coded

### RUBY (RU)

SIZE	60 GRIT		80 GRIT		100 GRIT		150 GRIT		220 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/8x1/4x6	25100	1.39	24145	1.39	25190	1.39	25235	1.39	25280	1.39
1/8x1/2x6	25105	1.50	25150	1.50	25195	1.50	25240	1.50	25285	1.50
1/8x1x6	25110	2.59	25155	2.59	25200	2.59	25245	2.59	25290	2.59
1/4x1/4x6	25115	1.50	25160	1.50	25205	1.50	25250	1.50	25295	1.50
1/4x1/2x6	25120	1.90	25165	1.90	25210	1.90	25255	1.90	25300	1.90
1/2x1/2x6	25125	2.59	25170	2.59	25215	2.59	25260	2.59	25305	2.59
1/2x1x6	25130	3.58	25175	3.58	25220	3.58	25265	3.58	25310	3.58
1x1x6	25135	5.97	25180	5.97	25225	5.97	25270	5.97	25315	5.97
1x2x8	25140	8.71	25185	8.71	25230	8.71	25275	8.71	25320	8.71

### ROUGH OUT (RO)

SIZE	80 GRIT		100 GRIT		120 GRIT		150 GRIT		180 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/4x1x8	25350	1.23	25370	1.23	25390	1.23	25410	1.23	25430	1.23
1/2x1x8	25355	1.54	25375	1.54	25395	1.54	25415	1.54	25435	1.54
1x1x8	25360	2.19	25380	2.19	25400	2.19	25420	2.19	25440	2.19
1x2x8	25365	3.29	25385	3.29	25405	3.29	25425	3.29	25445	3.29

## FINISHING STONES (CONTINUED)

### DIEMAHER (DM)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	25450	1.00	25510	1.00	25570	1.00	25630	1.00	25690	1.00	25750	1.10	25810	1.10
1/16x1/2x6	25455	1.00	25515	1.00	25575	1.00	25635	1.00	25695	1.00	25755	1.10	25815	1.10
1/8x1/4x6	25460	1.00	25520	1.00	25580	1.00	25640	1.00	25700	1.00	25760	1.10	25820	1.10
1/8x1/2x6	25465	1.19	25525	1.19	25585	1.19	25645	1.19	25705	1.19	25765	1.32	25825	1.32
1/8x1x6	25470	1.39	25530	1.39	25590	1.39	25650	1.39	25710	1.39	25770	1.54	25830	1.54
5/32x5/32x4	25475	1.00	25535	1.00	25595	1.00	25655	1.00	25715	1.00	25775	1.10	25835	1.10
1/4x1/4x6	25480	1.19	25540	1.19	25600	1.19	25660	1.19	25720	1.19	25780	1.32	25840	1.32
1/4x1/2x6	25485	1.39	25545	1.39	25605	1.39	25665	1.39	25725	1.39	25785	1.54	25845	1.54
1/4x1x6	25490	2.23	25550	2.23	25610	2.23	25670	2.23	25730	2.23	25790	2.64	25850	2.64
1/2x1/2x6	25495	2.23	25555	2.23	25615	2.23	25675	2.23	25735	2.23	25795	2.64	25855	2.64
1/2x1x6	25500	2.84	25560	2.84	25620	2.84	25680	2.84	25740	2.84	25800	3.60	25860	3.60
1x1x6	25505	4.45	25565	4.45	25625	4.45	25685	4.45	25745	4.45	25805	5.63	25865	5.63

### MOLDMAKER (M)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	25930	1.00	25990	1.00	26050	1.00	26110	1.00	26170	1.00	26230	1.10	26290	1.10
1/16x1/2x6	25935	1.00	25995	1.00	26055	1.00	26115	1.00	26175	1.00	26235	1.10	26295	1.10
1/8x1/4x6	25940	1.00	26000	1.00	26060	1.00	26120	1.00	26180	1.00	26240	1.10	26300	1.10
1/8x1/2x6	25945	1.19	26005	1.19	26065	1.19	26125	1.19	26185	1.19	26245	1.32	26305	1.32
1/8x1x6	25950	1.39	26010	1.39	26070	1.39	26130	1.39	26190	1.39	26250	1.54	26310	1.54
5/32x5/32x4	25955	1.00	26015	1.00	26075	1.00	26135	1.00	26195	1.00	26255	1.10	26315	1.10
1/4x1/4x6	25960	1.19	26020	1.19	26080	1.19	26140	1.19	26200	1.19	26260	1.32	26320	1.32
1/4x1/2x6	25965	1.39	26025	1.39	26085	1.39	26145	1.39	26205	1.39	26265	1.54	26325	1.54
1/4x1x6	25970	2.23	26030	2.23	26090	2.23	26150	2.23	26210	2.23	26270	2.64	26330	2.64
1/2x1/2x6	25975	2.23	26035	2.23	26095	2.23	26155	2.23	26215	2.23	26275	2.64	26335	2.64
1/2x1x6	25980	2.84	26040	2.84	26100	2.84	26160	2.84	26220	2.84	26280	3.60	26340	3.60
1x1x6	25985	4.45	26045	4.45	26105	4.45	26165	4.45	26225	4.45	26285	5.63	26345	5.63

### MOLDMAKER+ (M+)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	26410	1.00	26470	1.00	26530	1.00	26590	1.00	26650	1.00	26710	1.10	26770	1.10
1/16x1/2x6	26415	1.00	26475	1.00	26535	1.00	26595	1.00	26655	1.00	26715	1.10	26775	1.10
1/8x1/4x6	26420	1.00	26480	1.00	26540	1.00	26600	1.00	26660	1.00	26720	1.10	26780	1.10
1/8x1/2x6	26425	1.19	26485	1.19	26545	1.19	26605	1.19	26665	1.19	26725	1.32	26785	1.32
1/8x1x6	26430	1.39	26490	1.39	26550	1.39	26610	1.39	26670	1.39	26730	1.54	26790	1.54
5/32x5/32x4	26435	1.00	26495	1.00	26555	1.00	26615	1.00	26675	1.00	26735	1.10	26795	1.10
1/4x1/4x6	26440	1.19	26500	1.19	26560	1.19	26620	1.19	26680	1.19	26740	1.32	26800	1.32
1/4x1/2x6	26445	1.39	26505	1.39	26565	1.39	26625	1.39	26685	1.39	26745	1.54	26805	1.54
1/4x1x6	26450	2.23	26510	2.23	26570	2.23	26630	2.23	26690	2.23	26750	2.64	26810	2.64
1/2x1/2x6	26455	2.23	26515	2.23	26575	2.23	26635	2.23	26695	2.23	26755	2.64	26815	2.64
1/2x1x6	26460	2.84	26520	2.84	26580	2.84	26640	2.84	26700	2.84	26760	3.60	26820	3.60
1x1x6	26465	4.45	26525	4.45	26585	4.45	26645	4.45	26705	4.45	26765	5.63	26825	5.63

### GENERAL (GP)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	26890	1.00	26950	1.00	27010	1.00	27070	1.00	27130	1.00	27190	1.10	27250	1.10
1/16x1/2x6	26895	1.00	26955	1.00	27015	1.00	27075	1.00	27135	1.00	27195	1.10	27255	1.10
1/8x1/4x6	26900	1.00	26960	1.00	27020	1.00	27080	1.00	27140	1.00	27200	1.10	27260	1.10
1/8x1/2x6	26905	1.19	26965	1.19	27025	1.19	27085	1.19	27145	1.19	27205	1.32	27265	1.32
1/8x1x6	26910	1.39	26970	1.39	27030	1.39	27090	1.39	27150	1.39	27210	1.54	27270	1.54
5/32x5/32x4	26915	1.00	26975	1.00	27035	1.00	27095	1.00	27155	1.00	27215	1.10	27275	1.10
1/4x1/4x6	26920	1.19	26980	1.19	27040	1.19	27100	1.19	27160	1.19	27220	1.32	27280	1.32
1/4x1/2x6	26925	1.39	26985	1.39	27045	1.39	27105	1.39	27165	1.39	27225	1.54	27285	1.54
1/4x1x6	26930	2.23	26990	2.23	27050	2.23	27110	2.23	27170	2.23	27230	2.64	27290	2.64
1/2x1/2x6	26935	2.23	26995	2.23	27055	2.23	27115	2.23	27175	2.23	27235	2.64	27295	2.64
1/2x1x6	26940	2.84	27000	2.84	27060	2.84	27120	2.84	27180	2.84	27240	3.60	27300	3.60
1x1x6	26945	4.45	27005	4.45	27065	4.45	27125	4.45	27185	4.45	27245	5.63	27305	5.63

## FINISHING STONES (CONTINUED)

### EDM (EM)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	27370	1.00	27430	1.00	27490	1.00	27550	1.00	27610	1.00	27670	1.10	27730	1.10
1/16x1/2x6	27375	1.00	27435	1.00	27495	1.00	27555	1.00	27615	1.00	27675	1.10	27735	1.10
1/8x1/4x6	27380	1.00	27440	1.00	27500	1.00	27560	1.00	27620	1.00	27680	1.10	27740	1.10
1/8x1/2x6	27385	1.19	27445	1.19	27505	1.19	27565	1.19	27625	1.19	27685	1.32	27745	1.32
1/8x1x6	27390	1.39	27450	1.39	27510	1.39	27570	1.39	27630	1.39	27690	1.54	27750	1.54
5/32x5/32x4	27395	1.00	27455	1.00	27515	1.00	27575	1.00	27635	1.00	27695	1.10	27755	1.10
1/4x1/4x6	27400	1.19	27460	1.19	27520	1.19	27580	1.19	27640	1.19	27700	1.32	27760	1.32
1/4x1/2x6	27405	1.39	27465	1.39	27525	1.39	27585	1.39	27645	1.39	27705	1.54	27765	1.54
1/4x1x6	27410	2.23	27470	2.23	27530	2.23	27590	2.23	27650	2.23	27710	2.64	27770	2.64
1/2x1/2x6	27415	2.23	27475	2.23	27535	2.23	27595	2.23	27655	2.23	27715	2.64	27775	2.64
1/2x1x6	27420	2.84	27480	2.84	27540	2.84	27600	2.84	27660	2.84	27720	3.60	27780	3.60
1x1x6	27425	4.45	27485	4.45	27545	4.45	27605	4.45	27665	4.45	27725	5.63	27785	5.63

### EDM+ (EM+)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	27850	1.10	27910	1.10	27970	1.10	28030	1.10	28090	1.10	28150	1.21	28210	1.21
1/16x1/2x6	27855	1.10	27915	1.10	27970	1.10	28035	1.10	28095	1.10	28155	1.21	28215	1.21
1/8x1/4x6	27860	1.10	27920	1.10	27980	1.10	28040	1.10	28100	1.10	28160	1.21	28220	1.21
1/8x1/2x6	27865	1.32	27925	1.32	27985	1.32	28045	1.32	28105	1.32	28165	1.45	28225	1.45
1/8x1x6	27870	1.54	27930	1.54	27990	1.54	28050	1.54	28110	1.54	28170	1.70	28230	1.70
5/32x5/32x4	27875	1.10	27935	1.10	27995	1.10	28055	1.10	28115	1.10	28175	1.21	28235	1.21
1/4x1/4x6	27880	1.32	27940	1.32	28000	1.32	28060	1.32	28120	1.32	28180	1.45	28240	1.45
1/4x1/2x6	27885	1.54	27945	1.54	28005	1.54	28065	1.54	28125	1.54	28185	1.70	28245	1.70
1/4x1x6	27890	2.44	27950	2.44	28010	2.44	28070	2.44	28130	2.44	28190	2.91	28250	2.91
1/2x1/2x6	27895	2.44	27955	2.44	28015	2.44	28075	2.44	28135	2.44	28195	2.91	28255	2.91
1/2x1x6	27900	3.13	27960	3.13	28020	3.13	28080	3.13	28140	3.13	28200	3.96	28260	3.96
1x1x6	27905	4.91	27965	4.91	28025	4.91	28085	4.91	28145	4.91	28205	6.19	28265	6.19

### OIL-FILLED (OT)

SIZE	100 GRIT		120 GRIT		150 GRIT		180 GRIT		220 GRIT		320 GRIT		400 GRIT	
	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE	UPC#	PRICE
1/16x1/4x6	28810	1.10	28870	1.10	28930	1.10	28990	1.10	29050	1.10	29110	1.21	29170	1.21
1/16x1/2x6	28815	1.10	28875	1.10	28935	1.10	28995	1.10	29055	1.10	29115	1.21	29175	1.21
1/8x1/4x6	28820	1.10	28880	1.10	28940	1.10	29000	1.10	29060	1.10	29120	1.21	29180	1.21
1/8x1/2x6	28825	1.32	28885	1.32	28945	1.32	29005	1.32	29065	1.32	29125	1.45	29185	1.45
1/8x1x6	28830	1.54	28890	1.54	28950	1.54	29010	1.54	29070	1.54	29130	1.70	29190	1.70
5/32x5/32x4	28835	1.10	28895	1.10	28955	1.10	29015	1.10	29075	1.10	29135	1.21	29195	1.21
1/4x1/4x6	28840	1.32	28900	1.32	28960	1.32	29020	1.32	29080	1.32	29140	1.45	29200	1.45
1/4x1/2x6	28845	1.54	28905	1.54	28965	1.54	29025	1.54	29085	1.54	29145	1.70	29205	1.70
1/4x1x6	28850	2.44	28910	2.44	28970	2.44	29030	2.44	29090	2.44	29150	2.91	29210	2.91
1/2x1/2x6	28855	2.44	28915	2.44	28975	2.44	29035	2.44	29095	2.44	29155	2.91	29215	2.91
1/2x1x6	28860	3.13	28920	3.13	28980	3.13	29040	3.13	29100	3.13	29160	3.96	29220	3.96
1x1x6	28865	4.91	28925	4.91	28985	4.91	29045	4.91	29105	4.91	29165	6.19	29225	6.19

# PRODUCT CROSSOVER INFORMATION

OUR PRODUCT NUMBER MATCHED WITH THE UPC NUMBER AND WITH THE LIST PRICE.

PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE
15	91017	12.50	300C	91225	7.28	A2A2FWE150I	81035	3.20	C45	91132	6.47	F63	91633	7.49
31AC	91016	6.35	301A	93725	7.28	A2A2FWE220H	82035	3.20	C46	91732	6.47	F64	92333	7.49
31AF	93016	6.35	301C	91125	7.28	A2A2FWE320H	81036	6.72	C47	91034	6.75	F65	91933	7.49
31AM	92016	6.35	302A	93625	7.28	AAFCC16S	83069	4.57	C48	94034	6.75	F66	92633	7.49
33	95000	8.50	302C	99025	7.28	AAFCC20U	82069	4.57	C49	91014	6.87	F67	93026	8.00
37	93018	3.12	303A	94225	7.28	AAFCC46Q	81072	6.72	C50	94014	6.87	F68	99026	8.00
38	92018	3.12	303C	91525	7.28	AAFCC80M	82072	6.72	C51	91033	7.49	F69	96026	8.00
39	91018	3.12	304A	94125	7.28	AAFCC80P	83072	6.72	C52	94033	7.49	F70	91326	8.00
56	81066	4.46	304C	91425	7.28	AAFCC150H	84072	6.72	C53	92132	6.47	F71	95004	8.30
57	93003	11.19	305A	93925	7.28	AAFCC150M	85072	6.72	C54	92732	6.47	F72	98004	8.30
97A	91626	8.00	305C	91325	7.28	AAFCC180P	86072	6.72	C55	92432	6.47	FB35M	94009	10.02
98A	91526	8.00	306A	94525	7.28	AAFCC320J	81073	17.75	C56	93132	6.47	FJB35M	92009	10.02
99A	91426	8.00	306C	91825	7.28	AAFCC320K	82073	17.75	C57	97034	6.75	FR521CC10Q4	83056	10.73
107A	93001	13.32	307A	94425	7.28	AAFWE150G	81038	6.00	C58	91134	6.75	FR521CC16T	84056	10.73
107C	91001	13.32	307C	91725	7.28	AAFWE1502H	83038	6.00	C59	97014	6.87	FR521CC24R	85056	10.73
108C	91002	15.78	308A	94325	7.28	AAFWE150I	84038	6.00	C60	91114	6.87	FR521CC46R	86056	10.73
109C	92001	13.32	308C	91625	7.28	AAFWE220H	85038	6.00	C61	97033	7.49	FR521CC80Q	87056	10.73
111A	92003	11.19	309A	94825	7.28	AAFWE240H	86038	6.00	C62	91133	7.49	FR521SCC10Q4	82052	5.46
111C	91003	11.19	309C	92225	7.28	AAFWR150H	82038	6.00	C63	91433	7.49	FR521SCC24T	83052	5.46
112A	92004	8.30	310A	94725	7.28	AAFWR320H	81039	9.92	C64	92133	7.49	FR521SCC46R	84052	5.46
112C	91004	8.30	310C	92125	7.28	AAHCC16U	82067	8.39	C65	91733	7.49	FR521SCC80S	85052	5.46
115	93006	15.47	311A	94625	7.28	AAHWE150H	81040	7.42	C66	92433	7.49	FR521SCC120Q	86052	5.46
116	92006	15.47	311C	91925	7.28	AAHWE240H	82040	7.42	C67	91026	8.00	FT123M	92015	4.73
117	91006	15.47	312A	95225	7.28	AAHWE3202H	81041	16.88	C68	97026	8.00	FT125M	92830	5.64
121	93008	12.51	312C	92525	7.28	BBDC10Q4	84049	6.18	C69	94026	8.00	FT126M	98025	7.28
121A	96008	12.51	313A	95125	7.28	BBDC120Q	88049	6.18	C70	91126	8.00	H6M	91007	26.8
122	92008	12.51	313C	92425	7.28	BBDC16S	85049	6.18	C71	93004	8.30	HB4T	71143	69.86
122A	95008	12.51	314A	94925	7.28	BBDC46T	86049	6.18	C72	96004	8.30	HB6T	71144	103.25
123	91008	12.51	314C	92325	7.28	BBDC80Q	87049	6.18	F1	93028	3.38	HB8T	71145	132.71
123A	94008	12.51	315A	95525	7.28	BBHC10Q4	88056	10.73	F2	91628	3.38	HB13T	71135	16.55
130	96006	15.47	315C	92825	7.28	BBHWE46H	81042	18.04	F3	96028	3.38	HB14T	71136	19.85
131	95006	15.47	316A	95425	7.28	BBHWE80H	82042	18.04	F4	91928	3.38	HB24T	71129	45.54
132	94006	15.47	316C	92725	7.28	BC1	91019	39.09	F5	99028	3.38	HB26T	71130	65.81
145	93010	3.78	317A	95325	7.28	BC2	91020	32.40	F6	92328	3.38	HF13T	71101	9.56
145A	96010	3.78	317C	92625	7.28	BRCC36H	82045	14.44	F7	91328	3.38	HF33T	71102	10.26
146	92010	3.78	318A	95825	7.28	BRCC60H	81045	14.44	F8	92628	3.38	HF43T	71103	13.29
146A	95010	3.78	318C	93225	7.28	BRGC80I	81046	15.00	F9	93029	4.50	HF113T	72101	9.56
147	91010	3.78	319A	95725	7.28	BRWE60I	81043	12.49	F10	99029	4.50	HF133T	72102	10.26
147A	94010	3.78	319C	93125	7.28	BRWR120I	82043	12.49	F11	96029	4.50	HF143T	72103	13.29
174A	96012	12.21	320A	95625	7.28	C1	91028	3.38	F12	91329	4.50	HF813T	71115	14.78
174C	93012	12.21	320C	92925	7.28	C2	91428	3.38	F13	93031	4.94	HF823T	71116	15.15
175A	95012	12.21	321A	96225	7.28	C3	94028	3.38	F14	99031	4.94	HF833T	71117	9.87
175C	92012	12.21	321C	93525	7.28	C4	91728	3.38	F15	96031	4.94	HF843T	71118	17.84
176A	94012	12.21	322A	96125	7.28	C4C4DWE60L	81037	3.36	F16	91331	4.94	HF853T	72116	15.15
176C	91012	12.21	322C	93425	7.28	C4C4DWE80L	82037	3.36	F17	91629	4.50	HF863T	72118	17.84
177A	94413	6.05	323A	95925	7.28	C4C4DWE150I	83037	3.36	F18	92329	4.50	HF873T	71119	15.74
177C	93113	6.05	323C	93325	7.28	C4C4DWE240H	84037	3.36	F19	91929	4.50	HM3T	71154	25.65
178A	94313	6.05	334A	96025	7.28	C4C4FCC20R	81071	4.94	F20	92629	4.50	HM4T	71155	71.36
178C	92913	6.05	335A	95025	7.28	C4C4FCC120M	82071	4.94	F21	91631	4.94	HM6T	71156	100.56
179A	94213	6.05	336A	94025	7.28	C4C4HWE220H	81065	5.32	F22	92331	4.94	HM8T	71157	129.99
179C	92813	6.05	337A	93025	7.28	C5	97028	3.38	F23	91931	4.94	HR200	81047	3.44
180A	91804	8.30	338A	92025	7.28	C6	92128	3.38	F24	92631	4.94	HR201	81048	3.71
180C	91504	8.30	339A	91025	7.28	C7	91128	3.38	F25	91630	5.64	HR202	81049	6.18
181A	91704	8.30	340A	91204	8.30	C8	92428	3.38	F26	92330	5.64	HR203	81050	10.64
181C	91404	8.30	341A	91104	8.30	C9	91029	4.50	F27	91930	5.64	HR204	81051	5.01
182A	91604	8.30	342A	99004	8.30	C10	97029	4.50	F28	92630	5.64	HR211	81052	5.46
182C	91304	8.30	345	81067	8.39	C11	94029	4.50	F29	91613	6.05	HR213	81053	8.29
183A	94713	6.05	347	81069	4.57	C12	91129	4.50	F30	92313	6.05	HR214	81054	13.64
183C	93413	6.05	349	81070	3.68	C13	91031	4.94	F31	91913	6.05	HR215	81055	19.43
184A	94613	6.05	373	92829	4.50	C14	97031	4.94	F32	92613	6.05	HR222	82049	6.18
184C	93313	6.05	389	92728	3.38	C15	94031	4.94	F33	93030	5.64	HR225	81056	10.73
185A	94513	6.05	390	92729	4.50	C16	91131	4.94	F34	99030	5.64	HR226	81057	18.34
185C	93213	6.05	391	93432	6.47	C17	91429	4.50	F35	96030	5.64	HR227	81058	22.16
186A	98015	4.73	392	92828	3.38	C18	92129	4.50	F36	91330	5.64	HR228	81059	27.11
186C	95015	4.73	425	93928	3.38	C19	91729	4.50	F37	93013	6.05	HR229	81060	30.10
187A	97015	4.73	426	92929	4.50	C20	92429	4.50	F38	99013	6.05	HR240	83049	6.18
187C	94015	4.73	428	93128	3.38	C21	91431	4.94	F39	96013	6.05	HR241	82053	8.29
188	91021	3.50	431	92002	15.78	C22	92131	4.94	F40	91313	6.05	HR242	82056	10.73
189A	96015	4.73	433	94001	13.32	C23	91731	4.94	F41	93032	6.47	HR243	81061	27.38
189C	93015	4.73	438	93129	4.75	C24	92431	4.94	F42	96032	6.47	HR250	81062	17.81
192	91022	4.20	440	93532	6.42	C25	91430	5.64	F43	99032	6.47	HR252	81063	14.06
198	93027	5.13	445AC	97016	6.35	C26	92130	5.64	F44	91632	6.47	HR275	82062	17.81
217	91023	15.24	445AF	99016	6.35	C27	91730	5.64	F45	91332	6.47	HS3T	71124	28.11
289	91024	14.71	445AM	98016	6.35	C28	92430	5.64	F46	91932	6.47	HS4T	71125	45.83
292AC	94011	5.43	445CC	94016	6.35	C29	91413	6.05	F47	93034	6.75	HS14T	71126	26.07
292AF	96011	5.43	445CF	96016	6.35	C30	92113	6.05	F48	96034	6.75	M1	92028	3.38
292AM	95011	5.43	445CM	95016	6.35	C31	91713	6.05	F49	93014	6.87	M2	91528	3.38
292C	91011	5.43	446AC	95213	6.05	C32	92413	6.05	F50	96014	6.87	M3	95028	3.38
292F	93011	5.43	446AF	95413	6.05	C33	91030	5.64	F51	93033	7.49	M4	91828	3.38
292M	92011	5.43	446AM	95313	6.05	C34	97030	5.64	F52	96033	7.49	M5	98028	3.38
293AC	94813	6.05	446CC	93813	6.05	C35	94030	5.64	F53	92332	6.47	M6	92228	3.38
293AF	95113	6.05	446CF	94113	6.05	C36	91130	5.64	F54	92932	6.47	M7	91228	3.38
293AM	94913	6.05	446CM	93913	6.05	C37	91013	6.05	F55	92632	6.47	M8	92528	3.38
293CC	93513	6.05	A2A2DWE220H	81064	2.66	C38	97013	6.05	F56	93332	6.47	M9	92029	

# PRODUCT CROSSOVER INFORMATION

OUR PRODUCT NUMBER MATCHED WITH THE UPC NUMBER AND WITH THE LIST PRICE (CONTINUED).

PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE	PRODUCT NUMBER	UPC# 691019-( )	LIST PRICE
M16	91231	4.94	M37	92013	6.05	M58	91234	6.75	SB6B	71138	33.08	SHF843M	71111	14.24
M17	91529	4.50	M38	98013	6.05	M59	98014	6.87	SB8B	71139	43.94	SHF853M	71112	12.12
M18	92229	4.50	M39	95013	6.05	M60	91214	6.87	SB13B	71131	5.64	SHF863M	72111	14.24
M19	91829	4.50	M40	91213	6.05	M61	98033	7.49	SB14B	71132	6.26	SHF873M	71113	12.57
M20	92529	4.50	M41	92032	6.47	M62	91233	7.49	SHB4M	71140	44.72	SHF883M	71108	12.89
M21	91531	4.94	M42	95032	6.47	M63	91533	7.49	SHB6M	71141	66.08	SHF893M	71114	33.14
M22	92231	4.94	M43	98032	6.47	M64	92233	7.49	SHB8M	71142	84.93	SHM3	71150	19.56
M23	91831	4.94	M44	91532	6.47	M65	91833	7.49	SHB13M	71133	9.92	SHM4	71151	52.92
M24	92531	4.94	M45	91232	6.47	M66	92533	7.49	SHB14M	71134	11.87	SHM6	71152	78.33
M25	91530	5.64	M46	91832	6.47	M67	92026	8.00	SHB24M	71127	29.15	SHM8	71153	101.04
M26	92230	5.64	M47	92034	6.75	M68	98026	8.00	SHB26M	71128	42.12	SHM10	71100	122.25
M27	91830	5.64	M48	95034	6.75	M69	95026	8.00	SHF13M	71104	7.62	SHS3M	71121	18.02
M28	92530	5.64	M49	92014	6.87	M70	91226	8.00	SHF33M	71105	8.18	SHS4M	71122	29.3
M29	91513	6.05	M50	95014	6.87	M71	94004	8.30	SHF43M	71106	10.61	SHS14M	71123	16.68
M30	92213	6.05	M51	92033	7.49	M72	97004	8.30	SHF113M	72104	7.62	SM3B	71146	13.2
M31	91813	6.05	M52	95033	7.49	MB35M	93009	10.02	SHF133M	72105	8.18	SM4B	71147	22.68
M32	92513	6.05	M53	92232	6.47	MJB35M	91009	10.02	SHF143M	72106	10.61	SM6B	71148	31.4
M33	92030	5.64	M54	92832	6.47	MT123M	91015	4.73	SHF803M	73101	9.56	SM9B	71149	40.35
M34	98030	5.64	M55	92532	6.47	MT125M	92730	5.64	SHF813M	71107	9.27	SS4B	71120	11.00
M35	95030	5.64	M56	93232	6.47	MT126M	97025	7.28	SHF823M	71109	10.89			
M36	91230	5.64	M57	98034	6.75	SB4B	71137	24.29	SHF833M	71110	7.88			

## COMPETITORS' PRODUCT NUMBERS CROSSED OVER TO OUR PRODUCT NUMBERS.

OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER
A1CO	C2	A27CO	C32	A49CO	182A	A250CO	342A	ACF433	323A	AFF414	306A	AMF324	M20	C6M	M35
A1FO	F2	A27FO	F32	A49FO	180A	A250FO	340A	ACF434	320A	AFF424	315A	AMF334	M22	C8C	C37
A1MO	M2	A27MO	M32	A49MO	181A	A250MO	341A	ACF444	302A	AFF433	321A	AMF336	M54	C8F	F37
A3CO	C6	A28CO	C64	A50CO	293AC	A251CO	99A	ACF454	314A	AFF434	318A	AMF344	M24	C8M	M37
A3FO	F6	A28FO	F64	A50FO	293AF	A251FO	97A	ACF464	311A	AFF444	300A	AMF346	M56	C9C	C39
A3MO	M6	A28MO	M64	A50MO	293AM	A251MO	98A	ACF474	305A	AFF454	312A	AMF356	M58	C9F	F39
A4CO	C34	A29CO	C66	A51CO	176A	A252CO	31AC	ACF544	339A	AFF464	309A	AMF366	M60	C9M	M39
A4FO	F34	A29FO	F66	A51FO	174A	A252FO	31AF	ACF644	336A	AFF474	303A	AMF376	M62	C10C	C41
A4MO	M34	A29MO	M66	A51MO	175A	A252MO	31AM	ACF723	99A	AFF544	337A	AMF414	307A	C10F	F41
A5CO	C8	A30CO	C68	A60CO	147A	A255FO	294AF	ACF724	31AC	AFF644	334A	AMF424	316A	C10M	M41
A5FO	F8	A30FO	F68	A60FO	145A	A255MO	294AM	ACS10	445AC	AFF723	97A	AMF433	322A	C11C	C3
A5MO	M8	A30MO	M68	A60MO	146A	A258FO	296F	ACS14	189A	AFF724	31AF	AMF434	319A	C11F	F3
A6CO	C36	A31CO	C70	A61CO	292AC	AB6	433	ACS15	293AC	AFS10	445AF	AMF444	301A	C11M	M3
A6FO	F36	A31FO	F70	A61FO	292AF	AB7	110A	ACS24	179A	AFS14	186A	AMF454	313A	C14C	C43
A6MO	M36	A31MO	M70	A61MO	292AM	AB8	431	ACS34	446AC	AFS15	293AF	AMF464	310A	C14F	F43
A8CO	C38	A32CO	C72	A66CO	123A	AB45	111A	ACS44	185A	AFS24	177A	AMF474	304A	C14M	M43
A8FO	F38	A32FO	F72	A66FO	121A	AB64	107A	ACS54	182A	AFS34	446AF	AMF544	338A	C15C	C9
A8MO	M38	A32MO	M72	A66MO	122A	AB134	112A	ACS66	176A	AFS44	183A	AMF644	335A	C15F	F9
A9CO	C40	A33CO	C28	A69CO	132	ACB6	123A	ACT134	342A	AFS54	180A	AMF723	98A	C15M	M9
A9FO	F40	A33FO	F28	A69FO	130	ACB8	132A	AFB6	121A	AFS66	174A	AMF724	31AM	C16C	C13
A9MO	M40	A33MO	M28	A69MO	131	ACB14	147A	AFB8	130	AFS76	15	AMS10	445AM	C16F	F13
A10CO	C42	A35CO	C18	A75CO	112A	ACB24	292AC	AFB14	145A	AFT123	FT123M	AMS14	187A	C16M	M13
A10FO	F42	A35FO	F18	A76CO	111A	ACF14	C2	AFB24	292AF	AFT124	294AF	AMS15	293AM	C17C	C15
A10MO	M42	A35MO	M18	A77CO	433	ACF24	C4	AFB35	FB35M	AFT125	FT125M	AMS24	178A	C17F	F15
A11CO	C4	A36CO	C22	A78CO	110A	ACF34	C6	AFF14	F2	AFT126	FT126M	AMS34	446AM	C17M	M45
A11FO	F4	A36FO	F22	A79CO	431	ACF36	C34	AFF24	F4	AFT134	340A	AMS44	184A	C18C	C15
A11MO	M4	A36MO	M22	A80CO	107A	ACF44	C8	AFF34	F6	AIT4	217	AMS54	181A	C18F	F45
A14CO	C44	A37CO	C24	A100	188	ACF46	C36	AFF36	F34	AMB6	122A	AMS66	175A	C18M	M45
A14FO	F44	A37FO	F24	A115FO	15	ACF56	C38	AFF44	F8	AMB8	131	AMT34	296F	C19C	C47
A14MO	M44	A37MO	M24	A201	217	ACF66	C40	AFF46	F36	AMB14	146A	AMT123	MT123M	C19F	F47
A15CO	C10	A38CO	C54	A240CO	336A	ACF76	C42	AFF56	F38	AMB24	292AM	AMT124	294AM	C19M	M47
A15FO	F10	A38FO	F54	A240FO	334A	ACF114	C10	AFF66	F40	AMB35	MB35M	AMT125	MT125M	C20C	C49
A15MO	M10	A38MO	M54	A240MO	335A	ACF124	C12	AFF76	F42	AMF14	M2	AMT126	MT126M	C20F	F49
A16CO	C14	A39CO	C56	A241CO	339A	ACF134	C14	AFF114	F10	AMF24	M4	AMT134	341A	C20M	M49
A16FO	F14	A39FO	F56	A241FO	337A	ACF136	C44	AFF124	F12	AMF34	M6	ATO1	188	C21C	C51
A16MO	M14	A39MO	M56	A241MO	338A	ACF144	C16	AFF134	F14	AMF36	M34	B1	BC1	C21F	F51
A17CO	C16	A40CO	C58	A242CO	308A	ACF146	C46	AFF136	F44	AMF44	M8	BF24	HR240	C21M	M51
A17FO	F16	A40FO	F58	A242FO	306A	ACF156	C48	AFF144	F16	AMF46	M36	BF26	HR241	C22C	C11
A17MO	M16	A40MO	M58	A242MO	307A	ACF166	C50	AFF146	F46	AMF56	M38	BF28	HR242	C22F	F11
A18CO	C46	A41CO	C60	A243CO	317A	ACF176	C52	AFF156	F48	AMF66	M40	BFH6	HR252	C22M	M11
A18FO	F46	A41FO	F60	A243FO	315A	ACF214	C26	AFF166	F50	AMF76	M42	BP14	HR201	C25C	C25
A18MO	M46	A41MO	M60	A243MO	316A	ACF224	C28	AFF176	F52	AMF114	M10	BP16	HR211	C25F	F25
A19CO	C48	A42CO	C62	A244CO	323A	ACF234	C30	AFF214	F26	AMF124	M12	BP18	HR222	C25M	M25
A19FO	F48	A42FO	F62	A244FO	321A	ACF236	C64	AFF224	F28	AMF134	M14	BP24	HR202	C26C	C29
A19MO	M48	A42MO	M62	A244MO	322A	ACF244	C32	AFF234	F30	AMF136	M44	BP26	HR213	C26F	F29
A20CO	C50	A43CO	C20	A245CO	320A	ACF246	C66	AFF236	F64	AMF144	M16	BP28	HR225	C26M	M29
A20FO	F50	A43FO	F20	A245FO	318A	ACF256	C68	AFF244	F32	AMF146	M46	C1C	C1	C27C	C31
A20MO	M50	A43MO	M20	A245MO	319A	ACF266	C70	AFF246	F66	AMF156	M48	C1F	F1	C27F	F31
A21CO	C52	A45CO	189A	A246CO	302A	ACF276	C72	AFF256	F68	AMF166	M50	C1M	M1	C27M	M31
A21FO	F52	A45FO	186A	A246FO	300A	ACF314	C18	AFF266	F70	AMF176	M52	C3C	C5	C28C	C63
A21MO	M52	A45MO	187A	A246MO	301A	ACF324	C20	AFF276	F72	AMF214	M26	C3F	F5	C28F	F63
A22CO	C12	A46CO	179A	A247CO	314A	ACF334	C22	AFF314	F18	AMF224	M28	C3M	M5	C28M	M63
A22FO	F12	A46FO	177A	A247FO	312A	ACF336	C54	AFF324	F20	AMF234	M30	C4C	C33	C29C	C65
A22MO	M12	A46MO	178A	A247MO	313A	ACF344	C24	AFF334	F22	AMF236	M64	C4F	F33	C29F	F65
A25CO	C26	A47CO	445AC	A248CO	305A	ACF346	C56	AFF336	F54	AMF244	M32	C4M	M33	C29M	M65
A25FO	F26	A47FO	445AF	A248FO	303A	ACF356	C58	AFF344	F24	AMF246	M66	C5C	C7	C30C	C67
A25MO	M26	A47MO	445AM	A248MO	304A	ACF366	C60	AFF346	F56	AMF256	M68	C5F	F7	C30F	F67
A26CO	C30	A48CO	185A	A249CO	311A	ACF376	C62	AFF356	F58	AMF266	M70	C5M	M7	C30M	M67
A26FO	F30	A48FO	183A	A249FO	309A	ACF414	308A	AFF366	F60	AMF276	M72	C6C	C35	C31C	C69
A26MO	M30	A48MO	184A	A249MO	310A	ACF424	317A	AFF376	F62	AMF314	M18	C6F	F35	C31F	F69

# PRODUCT CROSSOVER INFORMATION

COMPTETITORS' PRODUCT NUMBERS CROSSED OVER TO OUR PRODUCT NUMBERS (CONTINUED).

OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER	OTHER NUMBER	MODERN NUMBER		
C31M	M69	C244M	322C	CJF124	C11	CSF356	C57	FJF114	F9	FSF336	F53	IB8	431	MJF166	M49	MSF433	322C
C32C	C71	C245C	320C	CJF134	C13	CSF366	C59	FJF124	F11	FSF344	F23	IB45	111A	MJF176	M51	MSF434	319C
C32F	F71	C245F	318C	CJF136	C43	CSF376	C61	FJF134	F13	FSF346	F55	IB64	107A	MJF214	M25	MSF444	301C
C32M	M71	C245M	319C	CJF144	C15	CSF414	308C	FJF136	F43	FSF356	F57	IB134	112A	MJF224	M27	MSF454	313C
C33C	C27	C246C	302C	CJF146	C45	CSF424	317C	FJF144	F15	FSF366	F59	IT4	217	MJF234	M29	MSF464	310C
C33F	F27	C246F	300C	CJF156	C47	CSF433	323C	FJF146	F45	FSF376	F61	J63AST	33	MJF236	M63	MSF474	304C
C33M	M27	C246M	301C	CJF166	C49	CSF434	320C	FJF156	F47	FSF414	306C	JB6	109C	MJF244	M31	MSS10	445CM
C35C	C17	C247C	314C	CJF176	C51	CSF444	302C	FJF166	F49	FSF424	315C	JB7	110C	MJF246	M65	MSS14	187C
C35F	F17	C247F	312C	CJF214	C25	CSF454	314C	FJF176	F51	FSF433	321C	JB8	108C	MJF256	M67	MSS15	293CM
C35M	M17	C247M	313C	CJF224	C27	CSF464	311C	FJF214	F25	FSF434	318C	JB45	111C	MJF266	M69	MSS24	178C
C36C	C21	C248C	305C	CJF234	C29	CSF474	305C	FJF224	F27	FSF444	300C	JB64	107C	MJF276	M71	MSS34	446CM
C36F	F21	C248F	303C	CJF236	C63	CSS10	445CC	FJF234	F29	FSF454	312C	JB74	289	MJF314	M17	MSS44	184C
C36M	M21	C248M	304C	CJF244	C31	CSS14	189C	FJF236	F63	FSF464	309C	JB134	112C	MJF324	M19	MSS54	181C
C37C	C23	C249C	311C	CJF246	C65	CSS15	293CC	FJF244	F31	FSF474	303C	JT246	56	MJF334	M21	MSS66	175C
C37F	F23	C249F	309C	CJF256	C67	CSS24	179C	FJF246	F65	FSS10	445CF	MB6	122A	MJF336	M53	MST63	38
C37M	M23	C249M	310C	CJF266	C69	CSS34	446CC	FJF256	F67	FSS14	186C	MB8	131	MJF344	M23	MT34	341A
C38C	C53	C251C	99C	CJF276	C71	CSS44	185C	FJF266	F69	FSS15	293CF	MB14	146A	MJF346	M55	MT123	MT123M
C38F	F53	C251F	97C	CJF314	C17	CSS54	182C	FJF276	F71	FSS24	177C	MB24	292AM	MJF356	M57	MT124	294AM
C38M	M53	C251M	98C	CJF324	C19	CSS66	176C	FJF314	F17	FSS34	446CF	MB35	MB35M	MJF366	M59	MT125	MT125M
C39C	C55	C255C	294CC	CJF334	C21	CST63	39	FJF324	19	FSS44	183C	MF14	M2	MJF376	M61	MT126	MT126M
C39F	F55	C255F	294CF	CJF336	C53	CT134	342A	FJF334	F21	FSS54	180C	MF24	M4	MJF414	307C	MT134	341A
C39M	M55	C255M	294CM	CJF344	C23	FB6	121A	FJF336	F53	FSS66	174C	MF34	M6	MJF424	316C	NORBIDE	BC1
C40C	C57	CB6	123A	CJF346	C55	FB8	130	FJF344	F23	FT63	37	MF36	M36	MJF433	322C	S63AST	33
C40F	F57	CB8	132	CJF356	C57	FB14	145A	FJF346	F55	FT123	FT123M	MF44	M8	MJF434	319C	SAB4	SB4B
C40M	M57	CB14	147A	CJF366	C59	FB24	292AF	FJF356	F57	FT124	294AF	MF46	M36	MJF444	301C	SAB6	SB6
C41C	C59	CB24	292AC	CJF376	C61	FB35	FB35M	FJF366	F59	FT125	FT125M	MF56	M38	MJF454	313C	SAB8	SB8B
C41F	F59	CF14	C2	CJF414	308C	FF14	F2	FJF376	F61	FT126	FT126M	MF66	M40	MJF464	310C	SAB13	SB13B
C41M	M59	CF24	C4	CJF424	317C	FF24	F4	FJF414	306C	FT134	340A	MF76	M42	MJF474	304C	SAB14	SB14B
C42C	C61	CF34	C6	CJF433	323C	FF34	F6	FJF424	315C	GSHH13	39	MF114	M10	MJS10	445CM	SAM3	SM3B
C42F	F61	CF36	C34	CJF434	320C	FF36	F34	FJF433	321C	GSHH14	38	MF124	M12	MJS14	187C	SAM4	SM4B
C42M	M61	CF44	C8	CJF444	302C	FF44	F8	FJF434	318C	GSHH15	37	MF134	M14	MJS15	293CM	SAM6	SM6B
C43C	C19	CF46	C36	CJF454	314C	FF46	F36	FJF444	300C	HAB4	HB4T	MF136	M44	MJS24	178C	SAM8	SM8B
C43F	F19	CF56	C38	CJF464	311C	FF56	F38	FJF454	312C	HAB6	HB6T	MF144	M16	MJS34	446CM	SAS4	SS4B
C43M	M19	CF66	C40	CJF474	305C	FF66	F40	FJF464	309C	HAB8	HB8T	MF146	M46	MJS44	184C	SB4	SB4B
C45C	189C	CF76	C42	CJS10	445CC	FF76	F42	FJF474	303C	HAB13	HB13T	MF156	M48	MJS54	181C	SB6	SB6B
C45F	186C	CF114	C10	CJS14	189C	FF114	F10	FJS10	445CF	HAB14	HB14T	MF166	M50	MJS66	175C	SB6(TSS)	109C
C45M	187C	CF124	C12	CJS15	293CC	FF124	F12	FJS14	186C	HAB24	HB24T	MF176	M52	MJT63	38	SB7	110C
C46C	179C	CF134	C14	CJS24	179C	FF134	F14	FJS15	293CF	HAB26	HB26T	MF214	M26	MS10	445AM	SB8	SB8B
C46F	177C	CF136	C44	CJS34	446CC	FF136	F44	FJS24	177C	HAF13	HF13T	MF224	M28	MS14	187A	SB8(TSS)	108C
C46M	178C	CF144	C16	CJS44	185C	FF144	F16	FJS34	446CF	HAF33	HF33T	MF234	M30	MS15	293AM	SB13	SB13B
C47C	445CC	CF146	C46	CJS54	182C	FF146	F46	FJS44	183C	HAF43	HF43T	MF236	M64	MS24	178A	SB14	SB14B
C47F	445CF	CF156	C48	CJS66	176C	FF156	F48	FJS54	180C	HAF113	HF113T	MF244	M32	MS34	446AM	SB45	111C
C47M	445CM	CF166	C50	CJT63	39	FF166	F50	FJS66	174C	HAF133	HF133T	MF246	M66	MS44	184A	SB64	107C
C48C	185C	CF176	C52	CS10	445AC	FF176	F52	FJT63	37	HAF143	HF143T	MF256	M68	MS54	181A	SB74	289
C48F	183C	CF214	C26	CS14	189A	FF214	F26	FS10	445AF	HAF813	HF813T	MF266	M70	MS66	175A	SB134	112C
C48M	184C	CF224	C28	CS15	293AC	FF224	F28	FS14	186A	HAF823	HF823T	MF276	M72	MSB6	122	SHB4	SHB4M
C49C	182C	CF234	C30	CS24	179A	FF234	F30	FS15	293AF	HAF833	HF833T	MF314	M18	MSB8	116	SHB6	SHB6M
C49F	180C	CF236	C64	CS34	446AC	FF236	F64	FS24	177A	HAF843	HF843T	MF324	M20	MSB14	146	SHB8	SHB8M
C49M	181C	CF244	C32	CS44	185A	FF244	F32	FS34	446AF	HAF853	HF853T	MF334	M22	MSB24	292M	SHB13	SHB13M
C50C	293CC	CF246	C66	CS54	182A	FF246	F66	FS44	183A	HAF863	HF863T	MF336	M54	MSB35	MJB35M	SHB14	SHB14M
C50F	293CF	CF256	C68	CS66	176A	FF256	F68	FS54	180A	HAF873	HF873T	MF344	M24	MSF14	M1	SHB24	SHB24M
C50M	293CM	CF266	C70	CSB6	123	FF266	F70	FS66	174A	HAM3	HM3T	MF346	M56	MSF24	M3	SHB26	SHB26M
C51C	176C	CF276	C72	CSB8	117	FF276	F72	FS76	15	HAM4	HM4T	MF356	M58	MSF34	M5	SHF13	SHF13M
C51F	174C	CF314	C18	CSB14	147	FF314	F18	FSB6	121	HAM6	HM6T	MF366	M60	MSF36	M33	SHF33	SHF33M
C51M	175C	CF324	C20	CSB24	292C	FF324	F20	FSB8	115	HAM8	HM8T	MF376	M62	MSF44	M7	SHF43	SHF43M
C60C	147	CF334	C22	CSF14	C1	FF334	F22	FSB14	145	HAS3	HS3T	MF414	307A	MSF46	M35	SHF113	SHF113M
C60F	145	CF336	C54	CSF24	C3	FF336	F54	FSB24	292F	HAS4	HS4T	MF424	316A	MSF56	M37	SHF133	SHF133M
C60M	146	CF344	C24	CSF34	C5	FF344	F24	FSB35	FJB35M	HAS14	HS14T	MF433	322A	MSF66	M39	SHF143	SHF143M
C61C	292C	CF346	C56	CSF36	C33	FF346	F56	FSF14	F1	HB4	HB4T	MF434	319A	MSF76	M41	SHF803	SHF803M
C61F	292F	CF356	C58	CSF44	C7	FF356	F58	FSF24	F3	HB6	HB6T	MF444	301A	MSF114	M9	SHF813	SHF813M
C61M	292M	CF366	C60	CSF46	C35	FF366	F60	FSF34	F5	HB8	HB8T	MF454	313A	MSF124	M11	SHF823	SHF823M
C66C	123	CF376	C62	CSF56	C37	FF376	F62	FSF36	F33	HB13	HB13T	MF464	310A	MSF134	M13	SHF833	SHF833M
C66F	121	CF414	308A	CSF66	C39	FF414	306A	FSF44	F7	HB14	HB14T	MF474	304A	MSF136	M43	SHF843	SHF843M
C66M	122	CF424	317A	CSF76	C41	FF424	315A	FSF46	F35	HB24	HB24T	MF544	338A	MSF144	M15	SHF853	SHF853M
C69C	117	CF433	323A	CSF114	C9	FF433	321A	FSF56	F37	HB26	HB26T	MF644	335A	MSF146	M45	SHF863	SHF863M
C69F	115	CF434	320A	CSF124	C11	FF434	318A	FSF66	F39	HF13	HF13T	MF723	98A	MSF156	M47	SHF873	SHF873M
C69M	116	CF444	302A	CSF134	C13	FF444	300A	FSF76	F41	HF33	HF33T	MF724	31AM	MSF166	M49	SHF883	SHF883M
C75CF	112C	CF454	314A	CSF136	C43	FF454	312A	FSF114	F9	HF43	HF43T	MJB6	122	MSF176	M51	SHF893	SHF893M
C76CF	111C	CF464	311A	CSF144	C15	FF464	309A	FSF124	F11	HF113	HF113T	MJB8	116	MSF214	M25	SHR26	SHB26M
C77CF	109C	CF474	305A	CSF146	C45	FF474	303A	FSF134	F1	HF133	HF133T	MJB14	146	MSF224	M27	SHS3	SHS3M
C78CF	110C	CF544	339A	CSF156	C47	FF544	337A	FSF136	F43	HF143	HF143T	MJB24	292M	MSF234	M29	SHS4	SHS4M
C79CF	108C	CF644	336A	CSF166	C49	FF644	334A	FSF144	F15	HF813	HF813T	MJB35	MJB35M	MSF236	M63	SHS14	SHS14M
C80CF	107C	CF723	99A	CSF176	C51	FF723	97A	FSF146	F45	HF823	HF823T	MJF14	M1	MSF244	M31	SM3	SM3B
C100	192	CF724	31AC	CSF214	C25	FF724	31AF	FSF156	F47	HF833	HF833T	MJF24	M3	MSF246	M65	SM4	SM4B
C240C	336C	CJB6	123	CSF224	C27	FJB6	121	FSF166	F49	HF843	HF843T	MJF34	M5	MSF256	M67	SM6	SM6B
C240F	334C	CJB8	117	CSF234	C29	FJB8	115	FSF176	F51	HF853	HF853T	MJF36	M33	MSF266	M69	SM8	SM8B
C240M	335C	CJB14	147	CSF236	C63	FJB14	145	FSF214	F25	HF863	HF863T	MJF44	M7	MSF276	M71	SR26	SHB26M
C241C	339C	CJB24	292C</														

## UPC NUMBER MATCHED TO PRODUCT NUMBER

UPC# 691019-( )	PRODUCT NUMBER	UPC# 691019-( )	PRODUCT NUMBER	UPC# 691019-( )	PRODUCT NUMBER	UPC# 691019-( )	PRODUCT NUMBER	UPC# 691019-( )	PRODUCT NUMBER	UPC# 691019-( )	PRODUCT NUMBER
71100	SHM10	81060	HR229	91032	C41	91931	F23	93001	107A	95008	122A
71101	HF13T	81061	HR243	91033	C51	91932	F46	93003	57	95010	146A
71102	HF33T	81062	HR250	91034	C47	91933	F65	93004	C71	95011	292AM
71103	HF43T	81063	HR252	91104	341A	92001	109C	93006	115	95012	175A
71104	SHF13M	81064	A2A2DWE220H	91113	C40	92002	431	93008	121	95013	M39
71105	SHF33M	81065	C4C4HWE220H	91114	C60	92003	111A	93009	MB35M	95014	M50
71106	SHF43M	81066	56	91125	301C	92004	112A	93010	145	95015	186C
71107	SHF813M	81067	345	91126	C70	92006	116	93011	292F	95016	445CM
71108	SHF883M	81068	A2A2FGC320K	91128	C7	92008	122	93012	174C	95025	335A
71109	SHF823M	81069	347	91129	C12	92009	FJB35M	93013	F37	95026	M69
71110	SHF833M	81070	349	91130	C36	92010	146	93014	F49	95028	M3
71111	SHF843M	81071	C4C4FCC20R	91131	C16	92011	292M	93015	189C	95029	M11
71112	SHF853M	81072	AAFCC46Q	91132	C45	92012	175C	93016	31AF	95030	M35
71113	SHF873M	81073	AAFCC320J	91133	C62	92013	M37	93018	37	95031	M15
71114	SHF893M	82035	A2A2FWE220H	91134	C58	92014	M49	93025	337A	95032	M42
71115	HF813T	82037	C4C4DWE80L	91204	340A	92015	FT123M	93026	F67	95033	M52
71116	HF823T	82038	AAFWR150H	91213	M40	92016	31AM	93027	198	95034	M48
71117	HF833T	82040	AAHWE240H	91214	M60	92018	38	93028	F1	95113	293AF
71118	HF843T	82042	BBHWE80H	91225	300C	92025	338A	93029	F9	95125	313A
71119	HF873T	82043	BRWR120I	91226	M70	92026	M67	93030	F33	95213	446AC
71120	SS4B	82044	A2A2FCC80M	91228	M7	92027	294AF	93031	F13	95225	312A
71121	SHS3M	82045	BRCC36H	91229	M12	92028	M1	93032	F41	95313	446AM
71122	SHS4M	82049	HR222	91230	M36	92029	M9	93033	F51	95325	317A
71123	SHS14M	82052	FR521SCC10Q4	91231	M16	92030	M33	93034	F47	95413	446AF
71124	HS3T	82053	HR241	91232	M45	92031	M13	93113	177C	95425	316A
71125	HS4T	82056	HR242	91233	M62	92032	M41	93125	319C	95525	315A
71126	HS14T	82062	HR275	91234	M58	92033	M51	93128	428	95625	320A
71127	SHB24M	82067	AAHCC16U	91304	182C	92034	M47	93129	438	95725	319A
71128	SHB26M	82069	AAFCC20U	91313	F40	92113	C30	93132	C56	95825	318A
71129	HB24T	82071	C4C4FCC120M	91314	F60	92125	310C	93213	185C	95925	323A
71130	HB26T	82072	AAFCC80M	91325	305C	92128	C6	93225	318C	96004	C72
71131	SB13B	82073	AAFCC320K	91326	F70	92129	C18	93232	M56	96006	130
71132	SB14B	83037	C4C4DWE150I	91328	F7	92130	C26	93313	184C	96008	121A
71133	SHB13M	83038	AAFWE1502H	91329	F12	92131	C22	93325	323C	96010	145A
71134	SHB14M	83044	A2A2FCC150K	91330	F36	92132	C53	93332	F56	96011	292AF
71135	HB13T	83049	HR240	91331	F16	92133	C64	93413	183C	96012	174A
71136	HB14T	83052	FR521SCC24T	91332	F45	92213	M30	93425	322C	96013	F39
71137	SB4B	83056	FR521CC10Q4	91333	F62	92225	309C	93432	391	96014	F50
71138	SB6B	83069	AAFCC16S	91334	F58	92228	M6	93513	293CC	96015	189A
71139	SB8B	83072	AAFCC80P	91404	181C	92229	M18	93525	321C	96016	445CF
71140	SHB4M	84037	C4C4DWE240H	91413	C29	92230	M26	93532	440	96025	334A
71141	SHB6M	84038	AAFWE150I	91425	304C	92231	M22	93613	293CM	96026	F69
71142	SHB8M	84044	A2A2FCC150M	91426	99A	92232	M53	93625	302A	96028	F3
71143	HB4T	84049	BBDC10Q4	91428	C2	92233	M64	93713	293CF	96029	F11
71144	HB6T	84052	FR521SCC46R	91429	C17	92313	F30	93725	301A	96030	F35
71145	HB8T	84056	FR521CC16T	91430	C25	92325	314C	93813	446CC	96031	F15
71146	SM3B	84072	AAFCC150H	91431	C21	92328	F6	93825	300A	96032	F42
71147	SM4B	85038	AAFWE220H	91432	C44	92329	F18	93913	446CM	96033	F52
71148	SM6B	85044	A2A2FCC220K	91433	C63	92330	F26	93925	305A	96034	F48
71149	SM8B	85049	BBDC16S	91504	180C	92331	F22	93928	425	96125	322A
71150	SHM3	85052	FR521SCC80S	91513	M29	92332	F53	94001	433	96225	321A
71151	SHM4	85056	FR521CC24R	91525	303C	92333	F64	94004	M71	97004	M72
71152	SHM6	85072	AAFCC150H	91526	98A	92413	C32	94006	132	97013	C38
71153	SHM8	86038	AAFWE240H	91528	M2	92425	313C	94008	123A	97014	C59
71154	HM3T	86049	BBDC46T	91529	M17	92428	C8	94009	FB35M	97015	187A
71155	HM4T	86052	FR521SCC120Q	91530	M25	92429	C20	94010	147A	97016	445AC
71156	HM6T	86056	FR521CC46R	91531	M21	92430	C28	94011	292AC	97025	MT126M
71157	HM8T	86072	AAFCC180P	91532	M44	92431	C24	94012	176A	97026	C68
72101	HF113T	87049	BBDC80Q	91533	M63	92432	C55	94013	C39	97028	C5
72102	HF133T	87056	FR521CC80Q	91604	182A	92433	C66	94014	C50	97029	C10
72103	HF143T	88049	BBDC120Q4	91613	F29	92513	M32	94015	187C	97030	C34
72104	SHF113M	88056	BBHCC10Q4	91625	308C	92525	312C	94016	445CC	97031	C14
72105	SHF133M	91001	107C	91626	97A	92528	M8	94025	336A	97032	C43
72106	SHF143M	91002	108C	91628	F2	92529	M20	94026	C69	97033	C61
72111	SHF863M	91003	111C	91629	F17	92530	M28	94028	C39	97034	C57
72116	HF853T	91004	112C	91630	F25	92531	M24	94029	C11	98004	F72
72118	HF863T	91006	117	91631	F21	92532	M55	94030	C35	98013	M38
73101	SHF803M	91007	H6M	91632	F44	92533	M66	94031	C15	98014	M59
81035	A2A2FWE150I	91008	123	91633	F63	92613	F32	94032	C42	98015	186A
81036	A2A2FWE320H	91009	MJB35M	91704	181A	92625	317C	94033	C52	98016	445AM
81037	C4C4DWE60L	91010	147	91713	C31	92628	F8	94034	C48	98025	FT126M
81038	AAFWE150G	91011	292C	91725	307C	92629	F20	94113	446CF	98026	M68
81039	AAFWR320H	91012	176C	91728	C4	92630	F28	94125	304A	98028	M5
81040	AAHWE150H	91013	C37	91729	C19	92631	F24	94213	179A	98029	M10
81041	AAHWE3202H	91014	C49	91730	C27	92632	F55	94225	303A	98030	M34
81042	BBHWE46H	91015	MT123M	91731	C23	92633	F66	94313	178A	98031	M14
81043	BRWE60I	91016	31AC	91732	C46	92713	296F	94325	308A	98032	M43
81044	A2A2FCC24S	91017	15	91733	C65	92725	316C	94413	177A	98033	M61
81045	BRCC60H	91018	39	91804	180A	92728	389	94425	307A	98034	M57
81046	BRGC80I	91019	BC1	91813	M31	92729	390	94513	185A	99004	342A
81047	HR200	91020	BC2	91825	306C	92730	MT125M	94525	306A	99013	F38
81048	HR201	91021	188	91828	M4	92732	C54	94613	184A	99014	F59
81049	HR202	91022	192	91829	M19	92813	179C	94625	311A	99016	445AF
81050	HR203	91023	217	91830	M27	92825	315C	94713	183A	99025	302C
81051	HR204	91024	289	91831	M23	92828	392	94725	310A	99026	F68
81052	HR211	91025	339A	91832	M46	92829	373	94813	293AC	99028	F5
81053	HR213	91026	C67	91833	M65	92830	FT125M	94825	309A	99029	F10
81054	HR214	91027	294AM	91913	F31	92832	M54	94913	293AM	99030	F34
81055	HR215	91028	C1	91925	311C	92913	178C	94925	314A	99031	F14
81056	HR225	91029	C9	91928	F4	92925	320C	95000	33	99032	F43
81057	HR226	91030	C33	91929	F19	92929	426	95004	F71	99033	F61
81058	HR227	91031	C13	91930	F27	92932	F54	95006	131	99034	F57
81059	HR228										

# NOTES



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