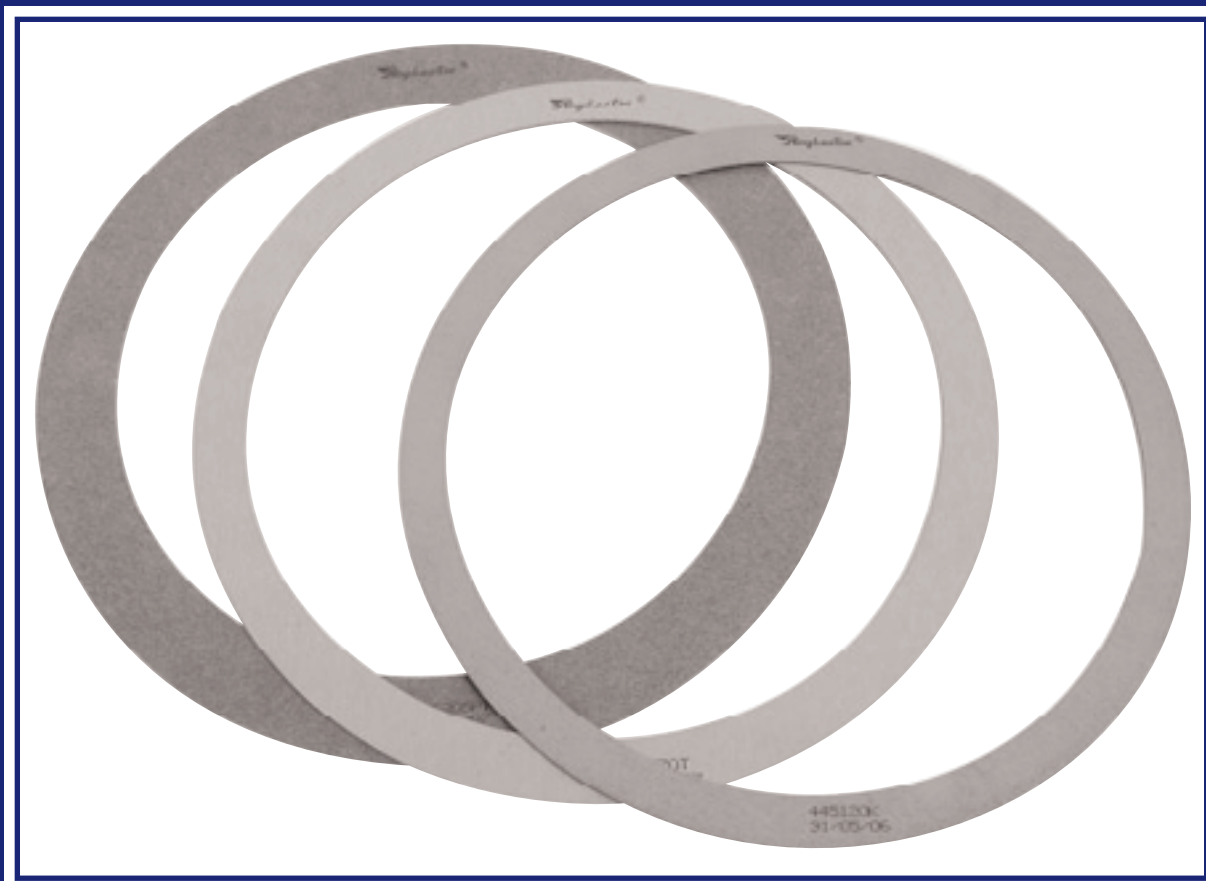


Raybestos[®] Friction Rings from **Sonnax**



Sonnax is pleased to announce it is now the exclusive distributor for the entire line of Raybestos friction materials for torque converters.

Get the finest, most reliable friction products available, backed by years of research, testing and strict quality control standards.

 **sonnax**[®]
TIME TESTED • INDUSTRY TRUSTED[™]



Sonnax brand torque converter friction components have been discontinued and replaced by Raybestos® brand friction components, so there will be some minor changes in the products and possibly the process you employ when bonding these friction rings.

Product Changes

- The Raybestos part numbers found on the following pages are the numbers you should use when ordering torque converter friction material from Sonnax.
- The water-based “FE” style adhesive that was an option on Sonnax brand torque converter friction rings is no longer available. SonnaTack, the water-based pre-tacking agent that was formulated for use only with the Sonnax brand “FE” adhesive, is also no longer available.
- The only adhesive now available for pre-coated friction rings is MEK-based and is the same adhesive used by Raybestos on all of its adhesive-backed friction rings.
- The “Low Carbon” friction material previously offered by Sonnax will no longer be available. The “High Carbon” material remains available, and is indicated by an “HC” suffix to the part number. The Raybestos Tan material (“T” suffix) will replace the Sonnax Red paper, while the Raybestos Kevlar® material (“K” suffix) replaces the Sonnax Green material. The Raybestos PowerTorque™ (“PT” suffix) and SW Carbon™ materials (“C” suffix) will also be available.

Process Changes

- As stated above, friction rings with the “FE” type of water-based adhesive are no longer available. If you previously bonded Sonnax brand “FE” (water-based adhesive) style rings, you must remember that Raybestos brand rings (with MEK-based adhesive) have slightly different bonding properties. In general, MEK-based adhesives require slightly more heat and have different “flow” and “cure” characteristics, compared to water-based adhesive.
- If you have been using Sonnax “F” rings with MEK-based adhesive, you do not have to change your current process.
- Applying methyl ethyl ketone (MEK) to the adhesive is **NOT** an acceptable method of making the friction ring “tacky” for bonding. Using MEK as a tacking agent promotes “out gassing”, and will degrade the quality of the bond between the piston and friction material. Currently, if you want to “tack” the friction ring to the piston, the only approved method to do so is with SonnaPrep (p/n SPREP-Q), available in 1-quart cans from Sonnax.

Materials available

OEM Tan

Widely used by the OEM market for more than a decade, the Raybestos tan material contains cellulose fibers and a special blend of resins that provide excellent coefficients of friction. OEM Tan is available in .045" and .075" thicknesses.

High-Energy Kevlar®

Kevlar® material handles the added stress of clutch dampening on electronically controlled transmissions that would cause ordinary friction papers to glaze or burn. Kevlar® fibers in the paper provide smooth engagements and prevent shuddering during modulated TCC lockup. High-Energy Kevlar® is available in .045" and .075" thicknesses.

High Carbon

Originally developed by Sonnax, this solid, non-woven, thermally conductive High Carbon composite friction material performance is comparable to woven carbon and other OEM carbon materials. It is stable and durable over a broad range of operating temperatures and conditions and although it was originally developed for PWM and EC³, it is now used in other applications. The bonding process for High Carbon is the same as for most other materials. High Carbon is available in .040" and .070" thicknesses.

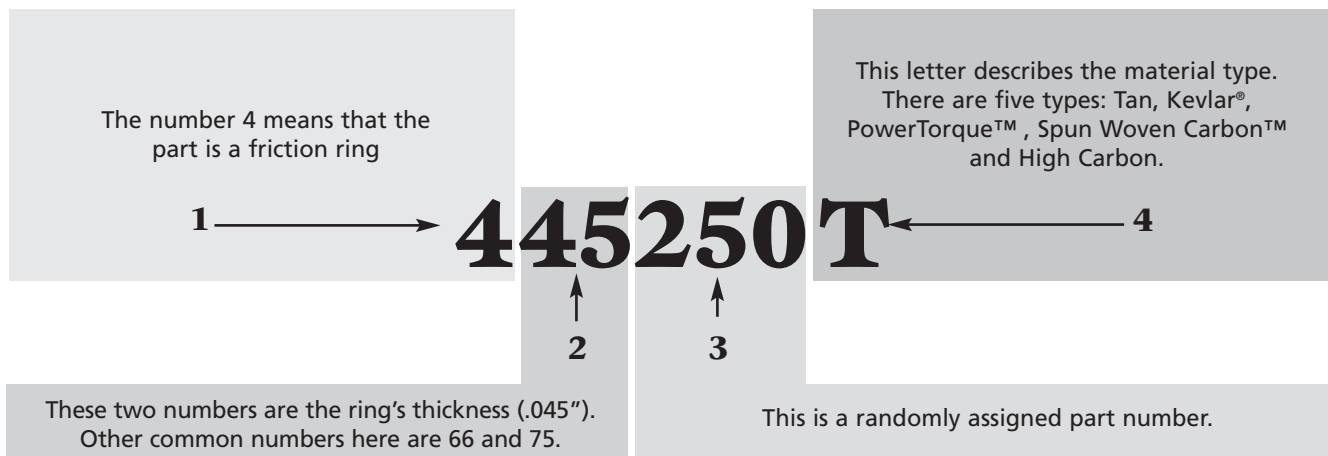
SW Carbon™

The revolutionary SW Carbon™ material was developed by Raybestos Powertrain as the first EC³ replacement part to meet GM's carbon material specifications. This spun-wound carbon material resists high heat and wear, provides smooth, efficient performance and lasts longer. SW Carbon™ is available in .045" thickness.

PowerTorque™

The PowerTorque™ friction ring is a heavy-duty/high performance friction material developed by Raybestos to solve the problem of flaking and wear in heavy-duty torque converter applications. With increased torque and temperature capacity, as well as higher density, the PowerTorque™ friction ring material helps eliminate premature wear on heavy-duty, diesel and work trucks, fleet vehicles, high performance passenger cars and racing applications. PowerTorque™ is available in .066" thickness.

Friction Ring part numbers simplified



Dimensions	Thickness / Material	Raybestos P/N	Sonnax Reference Number
6.815" x 6.438"	.045" Tan	445170T	FD-F-11
6.815" x 6.438"	.045" Kevlar®	445170K	FD-F-11K
6.815" x 6.438"	.075" Tan	475170T	
6.815" x 6.438"	.075" Kevlar®	475170K	
8.25" x 7.125"	.045" Tan	445160T	TO-F-2
8.25" x 7.125"	.045" Kevlar®	445160K	TO-F-2K
8.25" x 7.125"	.075" Tan	475160T	TO-F-3
8.25" x 7.125"	.075" Kevlar®	475160K	TO-F-3K
8.25" x 7.125"	.066" PowerTorque™	466160PT	
8.5" x 7.25"	.045" Tan	445360T	
8.5" x 7.25"	.045" Kevlar®	445360K	
8.5" x 7.25"	.075" Tan	475360T	
8.5" x 7.25"	.075" Kevlar®	475360K	
8.5" x 7.25"	.066" PowerTorque™	466360PT	
8.75" x 7.75"	.045" Tan	445150T	HO-F-1
8.75" x 7.75"	.045" Kevlar®	445150K	HO-F-1K
8.75" x 7.75"	.075" Tan	475150T	HO-F-2
8.75" x 7.75"	.075" Kevlar®	475150K	HO-F-2K
8.75" x 7.75"	.066" PowerTorque™	466150PT	
8.843" x 8.062"	.045" Tan	445140T	
8.843" x 8.062"	.045" Kevlar®	445140K	
8.843" x 8.062"	.075" Tan	475140T	
8.843" x 8.062"	.075" Kevlar®	475140K	
8.843" x 8.062"	.066" PowerTorque™	466140PT	
8.875" x 8"	.045" Tan	445130T	JA-F-2
8.875" x 8"	.045" Kevlar®	445130K	JA-F-2K
8.875" x 8"	.075" Tan	475130T	JA-F-4
8.875" x 8"	.075" Kevlar®	475130K	JA-F-4K
8.875" x 8"	.066" PowerTorque™	466130PT	
9" x 7.75"	.045" Tan	445320T	GM-F-4
9" x 7.75"	.045" Kevlar®	445320K	GM-F-4K
9" x 7.75"	.075" Tan	475320T	GM-F-5
9" x 7.75"	.075" Kevlar®	475320K	GM-F-5K
9" x 7.75"	.066" PowerTorque™	466320PT	
9" x 8"	.045" Tan	445390T	CC-F-1
9" x 8"	.045" Kevlar®	445390K	CC-F-1K
9" x 8"	.075" Tan	475390T	CC-F-2
9" x 8"	.075" Kevlar®	475390K	CC-F-2K
9" x 8"	.066" PowerTorque™	466390PT	
9" x 8.25"	.045" Tan	445310T	GM-F-3
9" x 8.25"	.045" Kevlar®	445310K	GM-F-3K
9" x 8.25"	.075" Tan	475310T	GM-F-6
9" x 8.25"	.075" Kevlar®	475310K	GM-F-6K
9" x 8.25"	.066" PowerTorque™	466310PT	
9.125" x 7.745"	.045" Tan	445220T	CH-F-5
9.125" x 7.745"	.045" Kevlar®	445220K	CH-F-5K
9.125" x 7.745"	.075" Tan	475220T	CH-F-8, CH-F-17, CH-F-18
9.125" x 7.745"	.075" Kevlar®	475220K	CH-F-8K, CH-F-17K, CH-F-18K
9.125" x 7.745"	.066" PowerTorque™	466220PT	
9.125" x 7.945"	.045" Tan	445225T	
9.125" x 7.945"	.045" Kevlar®	445225K	CH-F-16K
9.25" x 8.125"	.045" Tan	445120T	FD-F-4
9.25" x 8.125"	.045" Kevlar®	445120K	FD-F-4K
9.25" x 8.125"	.075" Tan	475120T	FD-F-6
9.25" x 8.125"	.075" Kevlar®	475120K	FD-F-6K
9.25" x 8.125"	.066" PowerTorque™	466120PT	
9.25" x 8.312"	.045" Tan	445110T	JA-F-1
9.25" x 8.312"	.045" Kevlar®	445110K	JA-F-1K
9.25" x 8.312"	.075" Tan	475110T	JA-F-3
9.25" x 8.312"	.075" Kevlar®	475110K	JA-F-3K
9.25" x 8.312"	.066" PowerTorque™	466110PT	

Dimensions	Thickness / Material	Raybestos P/N	Sonnax Reference Number
9.312" x 7.875"	.045" Kevlar®	445520K	
9.375" x 8.125"	.045" Tan	445100T	FD-F-10
9.375" x 8.125"	.045" Kevlar®	445100K	FD-F-10K
9.5" x 8.25"	.045" Tan	445300T	FS-F-1
9.5" x 8.25"	.045" Kevlar®	445300K	FS-F-1K
9.5" x 8.25"	.075" Tan	475300T	FS-F-2
9.5" x 8.25"	.075" Kevlar®	475300K	FS-F-2K
9.5" x 8.25"	.066" PowerTorque™	466300PT	
9.5" x 8.5"	.045" Tan	445090T	MZ-F-1, VW-F-1
9.5" x 8.5"	.045" Kevlar®	445090K	MZ-F-1K, VW-F-1K
9.5" x 8.5"	.075" Tan	475090T	FD-F-25, MZ-F-2, VW-F-3
9.5" x 8.5"	.075" Kevlar®	475090K	FD-F-25K, MZ-F-2K, VW-F-2K
9.5" x 8.5"	.066" PowerTorque™	466090PT	
9.625" x 7.625"	.045" Tan	445210T	CH-F-11
9.625" x 7.625"	.045" Kevlar®	445210K	CH-F-11K
9.625" x 7.625"	.075" Tan	475210T	CH-F-10
9.625" x 7.625"	.075" Kevlar®	475210K	CH-F-10K
9.625" x 7.625"	.066" PowerTorque™	466210PT	
9.625" x 8.375"	.045" Tan	445290T	
9.625" x 8.375"	.045" Kevlar®	445290K	
9.625" x 8.375"	.075" Tan	475290T	
9.625" x 8.375"	.075" Kevlar®	475290K	
9.625" x 8.375"	.066" PowerTorque™	466290PT	
9.6875" x 8.25"	.045" Tan	445380T	
9.725" x 8.25"	.045" Tan	445070T	FD-F-3
9.725" x 8.25"	.045" Kevlar®	445070K	FD-F-3K
9.725" x 8.25"	.075" Tan	475070T	FD-F-5
9.725" x 8.25"	.075" Kevlar®	475070K	FD-F-5K
9.725" x 8.25"	.066" PowerTorque™	466070PT	
9.75" x 8.125"	.066" PowerTorque™	445080T	FD-F-9
9.75" x 8.125"	.045" Kevlar®	445080K	FD-F-9K
9.75" x 8.125"	.075" Tan	475080T	
9.75" x 8.125"	.075" Kevlar®	475080K	
9.75" x 8.125"	.066" PowerTorque™	466080PT	
9.75" x 9"	.045" Tan	445060T	NI-F-1, FS-F-3
9.75" x 9"	.075" Tan	475060T	NI-F-2
9.75" x 9"	.075" Kevlar®	475060K	NI-F-2K
9.75" x 9"	.066" PowerTorque™	466060PT	
9.813" x 9.06"	.045" Tan	445340T	
9.875" x 8.75"	.045" Tan	445050T	FS-F-4
9.875" x 8.75"	.045" Kevlar®	445050K	FS-F-4K, JA-F-7K, NI-F-3K
9.875" x 8.75"	.075" Tan	475050T	FS-F-5, NI-F-4, JA-F-8
9.875" x 8.75"	.075" Kevlar®	475050K	FS-F-5K, NI-F-4K, JA-F-8K
9.875" x 8.75"	.066" PowerTorque™	466050PT	
9.921" x 7.921"	.045" Tan	445205T	
9.921" x 7.921"	.045" Kevlar®	445205K	
9.921" x 7.921"	.075" Tan	475205T	
9.921" x 7.921"	.075" Kevlar®	475205K	
9.921" x 7.921"	.066" PowerTorque™	466205PT	
9.938" x 8.875"	.045" Kevlar®	445450K	
9.938" x 8.875"	.045" Tan	445450T	
9.938" x 8.875"	.075" Kevlar®	475450K	
9.938" x 8.875"	.075" Tan	475450T	
9.938" x 8.875"	.066" PowerTorque™	466450PT	
10" x 8.25"	.066" PowerTorque™	466040PT	
10" x 8.25"	.045" Tan	445040T	TO-F-1
10" x 8.25"	.045" Kevlar®	445040K	TO-F-1K
10" x 8.25"	.075" Tan	475040T	TO-F-4
10" x 8.25"	.075" Kevlar®	475040K	TO-F-4K

Dimensions	Thickness / Material	Raybestos P/N	Sonnax Reference Number
10" x 8.75"	.045" Tan	445200T	CH-F-3
10" x 8.75"	.045" Kevlar®	445200K	CH-F-3K
10" x 8.75"	.075" Tan	475200T	CH-F-21
10" x 8.75"	.075" Kevlar®	475200K	CH-F-21K
10" x 8.75"	.066" PowerTorque™	466200PT	
10" x 9"	.045" Tan	445370T	
10" x 9"	.045" Kevlar®	445370K	
10" x 9"	.075" Tan	475370T	
10" x 9"	.075" Kevlar®	475370K	
10" x 9"	.066" PowerTorque™	466370PT	
10.135" x 9.35"	.045" Tan	445330T	HO-F-3
10.135" x 9.35"	.045" Kevlar®	445330K	HO-F-3K
10.135" x 9.35"	.075" Tan	475330T	HO-F-4
10.135" x 9.35"	.075" Kevlar®	475330K	HO-F-4K
10.135" x 9.35"	.066" PowerTorque™	466330PT	
10.25" x 8.625"	.045" Tan	445280T	CH-F-12
10.25" x 8.625"	.045" Kevlar®	445280K	CH-F-12K, TO-F-6K
10.25" x 8.625"	.075" Tan	475280T	CH-F-13
10.25" x 8.625"	.075" Kevlar®	475280K	CH-F-13K
10.25" x 8.625"	.066" PowerTorque™	466280PT	
10.375" x 9.375"	.045" Tan	445270T	GM-F-9
10.375" x 9.375"	.045" Kevlar®	445270K	GM-F-9K
10.375" x 9.375"	.075" Tan	475270T	GM-F-11
10.375" x 9.375"	.075" Kevlar®	475270K	GM-F-11K
10.375" x 9.375"	.066" PowerTorque™	466270PT	
10.5" x 8.625"	.045" Tan	445030T	FD-F-8
10.5" x 8.625"	.045" Kevlar®	445030K	FD-F-8K
10.5" x 9"	.045" Tan	445260T	TO-F-5
10.5" x 9"	.045" Kevlar®	445260K	TO-F-5K
10.5" x 9"	.075" Tan	475260T	
10.5" x 9"	.075" Kevlar®	475260K	
10.5" x 9"	.066" PowerTorque™	466260PT	
10.563" x 9.25"	.045" Tan	445190T	CH-F-1
10.563" x 9.25"	.045" Kevlar®	445190K	CH-F-1K
10.563" x 9.25"	.075" Tan	475190T	CH-F-2
10.563" x 9.25"	.075" Kevlar®	475190K	CH-F-2K
10.563" x 9.25"	.066" PowerTorque™	466190PT	
10.75" x 9.125"	.045" Tan	445180T	CH-F-14
10.75" x 9.125"	.045" Kevlar®	445180K	CH-F-14K
10.75" x 9.125"	.075" Tan	475180T	CH-F-15
10.75" x 9.125"	.075" Kevlar®	475180K	CH-F-15K
10.75" x 9.125"	.066" PowerTorque™	466180PT	
10.75" x 9.5"	.045" Tan	445020T	FD-F-19, JA-F-5
10.75" x 9.5"	.045" Kevlar®	445020K	FD-F-19K, JA-F-5K
10.75" x 9.5"	.075" Tan	475020T	JA-F-6
10.75" x 9.5"	.075" Kevlar®	475020K	JA-F-6K
10.75" x 9.5"	.066" PowerTorque™	466020PT	
11" x 9.56"	.045" Kevlar®	445440K	TO-F-7K
11" x 9.56"	.066" PowerTorque™	466440PT	
11.125" x 10"	.045" Tan	445250T	GM-F-1, FD-F-17
11.125" x 10"	.045" Kevlar®	445250K	GM-F-1K, FD-F-17K
11.125" x 10"	.075" Tan	475250T	GM-F-2
11.125" x 10"	.075" Kevlar®	475250K	GM-F-2K, FD-F-18K
11.125" x 10"	.066" PowerTorque™	466250PT	
11.25" x 10"	.045" Tan	445551T	
11.25" x 10"	.045" Kevlar®	445551K	
11.25" x 10"	.075" Tan	475551T	
11.25" x 10"	.075" Kevlar®	475551K	
11.25" x 10"	.066" PowerTorque™	466551PT	

Dimensions	Thickness / Material	Raybestos P/N	Sonnax Reference Number
11.25" x 9.7"	.045" Tan	445410T	
11.5" x 10"	.045" Tan	445010T	FD-F-7
11.5" x 10"	.045" Kevlar®	445010K	FD-F-7K
11.5" x 10"	.075" Tan	475010T	FD-F-12
11.5" x 10"	.075" Kevlar®	475010K	FD-F-12K
11.5" x 10"	.066" PowerTorque™	466010PT	
11.5" x 10.25"	.045" Tan	445240T	GM-F-7
11.5" x 10.25"	.045" Kevlar®	445240K	GM-F-7K, GM-F-13K
11.5" x 10.25"	.075" Tan	475240T	GM-F-8, GM-F-14
11.5" x 10.25"	.075" Kevlar®	475240K	GM-F-8K, GM-F-14K
11.5" x 10.25"	.066" PowerTorque™	466240PT	
11.57" x 10"	.045" Tan	445400T	With holes for Allison (World Series)
11.57" x 10"	.045" Kevlar®	445400K	AL-F-3K With holes for Allison (World Series)
11.57" x 10"	.075" Tan	475400T	AL-F-4 With holes for Allison (World Series)
11.57" x 10"	.075" Kevlar®	475400K	AL-F-4K With holes for Allison (World Series)
11.57" x 10"	.066" PowerTorque™	466400PT	With holes for Allison (World Series)
11.8" x 10.2"	.045" Tan	445510T	
11.8" x 10.2"	.045" Kevlar®	445510K	
11.8" x 10.2"	.075" Tan	475510T	
11.8" x 10.2"	.075" Kevlar®	475510K	
12.34" x 10.25"	.045" Kevlar®	445350K	AL-F-5K
12.34" x 10.25"	.075" Kevlar®	475350K	AL-F-6K
12.34" x 10.25"	.066" PowerTorque™	466350PT	
12.5" x 10.75"	.045" Kevlar®	445230K	GM-F-10K
12.5" x 10.75"	.075" Kevlar®	475230K	GM-F-12K
12.5" x 10.75"	.066" PowerTorque™	466230PT	

High Carbon Rings

8.75" x 7.75"	.040" High Carbon	445150HC	HO-F-1HC
9" x 7.75"	.040" High Carbon	445320HC	GM-F-4HC
9" x 7.75"	.070" High Carbon	475320HC	GM-F-5HC
9.125" x 8.125"	.040" High Carbon	445054HC	HO-F-9HC
9.5" x 8.25"	.040" High Carbon	445300HC	FS-F-1HC
9.5" x 8.25"	.070" High Carbon	475300HC	FS-F-2HC
9.725" x 8.25"	.045" High Carbon	445070HC	
9.875" x 8.75"	.040" High Carbon	445050HC	FS-F-4HC
9.875" x 8.75"	.070" High Carbon	475050HC	FS-F-5HC
9.9375" x 8.5"	.040" High Carbon	445044HC	HO-F-8HC
9.9375" x 8.9375"	.040" High Carbon	445064HC	HO-F-7HC
10.25" x 8.625"	.070" High Carbon	475280HC	
10.25" x 8.625"	.040" High Carbon	445280HC	
10.375" x 9.375"	.040" High Carbon	445270HC	GM-F-9HC
10.375" x 9.375"	.070" High Carbon	475270HC	GM-F-11HC
10.5" x 9.1875"	.070" High Carbon	475500HC	CH-F-20HC
11.125" x 10"	.040" High Carbon	445250HC	GM-F-1HC
11.125" x 10"	.070" High Carbon	475250HC	GM-F-2HC
11.5" x 10"	.070" High Carbon	475010HC	FD-F-12HC
11.5" x 10"	.040" High Carbon	445010HC	FD-F-7HC
11.5" x 10.25"	.070" High Carbon	475240HC	GM-F-8HC
11.5" x 13.625"	.040" High Carbon	445601HC	With holes for Allison (World Series)
11.5" x 10"	.070" High Carbon	475601HC	With holes for Allison (World Series)
11.57" x 10	.040" High Carbon	445400HC	With holes for Allison (World Series)
11.625" x 10.375"	.040" High Carbon	445084HC	GM-F-15HC
11.625" x 10.375"	.070" High Carbon	475084HC	GM-F-16HC
12.34" x 10.25"	.040" High Carbon	445350HC	AL-F-5HC
12.5" x 10.75"	.040" High Carbon	445230HC	GM-F-10HC
12.5" x 10.75"	.070" High Carbon	475230HC	GM-F-12H

Dimensions	Thickness / Material	Raybestos P/N	Sonnax Reference Number
SW Carbon™			
9" x 7.75"	.045" SW Carbon™	445320C	GM 245MM
9.625" x 8.375"	.045" SW Carbon™	445430C	GM 258MM
11.12" x 10"	.045" SW Carbon™	445250C	GM 298 & 300MM
Chrysler Floating Rings			
9.64" x 7.97"	.065"	455000	CH-F-6U, CH-F-6KU, CH-F-6RU
10.30" x 8.80"	.065"	460000	CH-F-9U, CH-F-9KU, CH-F-9RU
10.78" x 9.185"	.065"	450000	CH-F-4U, CH-F-4KU, CH-F-4RU
Master Rings			
12" x 6"	.045" Tan	RMR1245	
12" x 6"	.075" Tan	RMR1275	
13" x 6.125"	.040" High Carbon	RMR1344HC	
13" x 6.125"	.070" High Carbon	RMR1374HC	
13" x 7"	.045" Kevlar®	RMR1345	
13" x 7"	.066" PowerTorque™	RMR1366	
13" x 7"	.075" Kevlar®	RMR1375	

WARRANTY



Sonnax warrants to the purchaser that each part manufactured or supplied by Sonnax will be free from defects in material or in factory workmanship, under normal use and service. The Warranty period shall extend for one (1) year from the date of sale by Sonnax. Sonnax must receive all warranty claims before the end of the warranty period.

If Sonnax determines that the part is defective in material or in factory workmanship, Sonnax will, at its option, repair or replace the defective part, or issue a credit for the purchase price. This remedy is Sonnax's sole liability and the sole remedy provided by Sonnax for any breach of warranty.

All warranty-related product returns must be approved by Sonnax and clearly display the assigned Return Authorization number (R.A.#) on the packaging. Returns must be accompanied by the purchaser's copy of the original invoice to validate the date of purchase.

The Warranty does not cover:

- Removal and replacement labor costs
- Loss of time, inconvenience or other consequential damage
- Any Sonnax part that has been:
 - Subject to misuse, negligence, alteration, improper maintenance or accident
 - Improperly installed in the judgment of Sonnax, so as to adversely affect its performance and reliability

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO PARTS MANUFACTURED OR SUPPLIED BY SONNAX, AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SONNAX SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE, LOST PROFITS, LOST SAVINGS OR PUNITIVE DAMAGES RESULTING FROM ANY BREACH OF THIS WARRANTY. ANY REPRESENTATIONS OR DESCRIPTIONS IN BROCHURES, ADS OR CATALOGS ARE APPROXIMATE ONLY AND WILL NOT CREATE ANY WARRANTY OR OTHER OBLIGATION BY SONNAX. SONNAX DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH ITS PARTS OR PRODUCTS.