Zero Friction Cycling

Friction / wear test - cumuative wear - Main test protocol

WAX / DRIP / DRIP - WET / GREASE

	Block 1 - No Contamination	Block 2 - Dry Cont.	Block 3 - No Cont.	Block 4 - Wet cont.	Block 5 - No Cont.	Block 6 - Extreme Cont.	Extrapolated chain lifespan - blocks 1-5	Extrapolated wear based on block 1 only	Extrapolated wear based on block 2 only	Extrapolated wear Based on Block 4 only	Extrapolated wear Based on Block 6 only
Race 4+1	0.0%	0.3%	1.2%	19.5%	21.4%	49.4%	25,000	23,364	25,000	5,464	3,571
Shipwreckwax New Formula	0.0%	1.1%	1.7%	10.8%	11.9%	31.6%	25,000	25,000	25,000	10,990	5,076
Race 11+1	0.0%	1.4%	2.3%	6.9%	8.9%	44.6%					
Silca Hot Melt	0.3%	2.0%	6.6%	14.6%	19.0%	27.4%	25,000	25,000	25,000	12,500	11,628
Tflektn Mariposa flower power wax	2.3%	4.6%	4.6%	36.6%	46.0%	80.0%	10,416	25,000	21,739	3,125	3,125
Ceramic Spd UFO Drip New Formula	2.3%	5.7%	6.3%	38.6%	55.6%	92.2%	8,992	25,000	15,873	3,095	2,712
Tru Tension Tungsten Race - (T.O.A)	5.4%	7.4%	9.7%	48.0%	78.0%		6,410	18,519	25,000	2,610	1,800
Silca Super Secret Drip	2.9%	7.5%	7.5%	44.4%	73.4%	133.0%	6,811	25,000	21,739	2,710	1,515
Silca Synergetic	2.0%	9.7%	29.4%	102.9%			3,887	25,000	12,987	1,362	794
Molten Speed Wax Original Formula	0.0%	12.0%	12.0%	20.0%	20.0%	98.0%	25,000	25,000	8,333	12,500	1,282
Rex Black Diamond	2.3%	13.4%	30.0%	73%	97.1%	144.9%	5,154	25,000	9,009	2,347	1,174
Silca Synergetic	0.0%	18.3%	42.6%	70.0%	91.7%	147.0%	5,452	25,000	5,464	3,649	1,808
Session S-Wax	14.6%	20.3%	25.4%	58.0%	84.6%	121.1%					
Revolutes	4.0%	22.3%	39.7%	101.4%	155.0%		4,166	25,000	5,464	1,620	810
Tru Tension Tungsten All Weather	14.0%	24.0%	36.0%	97.0%	85.0%	117.0%	5,882	7,143	10,000	3,226	3,125
Shimano Factory Grease	10.9%	31.7%					2,000	9,174	4,785		
Shimano Factory grease + NFS	10.9%	31.8%	46.1%	74.7%	147.2%		4,500	9,174			
Rex Domestique	5.1%	33.7%	48.8%	93%			4,301	19,607	3,496	2,288	1,144
Emsave	19.1%	36.6%	38.6%	87.3%	118.0%		4,423	5,235	5,747	2,217	1,109
Rock N Roll Gold	8.9%	37.9%	57.9%	122.0%			3,460	11,235	3,448	1,538	769
Squirt	19.1%	39.0%	61.0%	109.4%			3,670	5,235	4,545	2,045	1,023
Shimano Factory grease + RNR Gold	10.9%	39.0%	59.0%	124%			3,225	9,174			
Rex Fric Shun	12.6%	40.0%	54.3%	82.9%	155.0%		3,007	7,937	3,650	3,495	1,748
Allied GRAX	22.0%	40.3%	59.1%	101.0%			3,960	4,545	5,464	2,180	1,091
Boneshield T9 - Aerosol	11.1%	43.4%	65.7%	113.1%			3,539	9,009	3,095	2,109	1,054
Cycle Star Gold	22.3%	53.1%	98.3%				3,052	4,484	3,236	4,000	692
Wolf tooth wt-1 on Factory grease	17.7%	54.8%	103.1%				3,894	25,000	12,987	1,170	694
White Lightning Epic Ride	22.9%	56.5%	160.7%				2,249	4,366	1,769	800	400
AB Graphene Wax	22.0%	60.3%	85.3%	188.7%			3,150	4,545	1,658	965	482
Brand Wax test 2 (dissolved in)	35.7%	69.4%	98.0%				3,061	2,801	2,967	1,500	750
Wolf tooth wt-1	16.3%	69.7%	123.7%				2,425	5,917	1,890	947	473
Muc Off C3 Ceramic Dry	10.6%	72.3%	124.6%				2,407	9,433	1,621	811	405
Dumonde Tech Pro X-Lite	16.0%	84.9%	106.6%								
Muc Off Luxlicious AF	8.9%	89.6%					2,320	8,900	1,282	641	320
Prolongcycle One	7.9%	102.9%									
Muc Off Hydro Dynamic	27.6%	126.6%					1,580	3,623	1,011	505	253
Muc Off Nano Lube	37.7%	145.4%					1,375	2,652	928	500	250
Finish line Ceramic Wax *(extrapolated 82 onwards)*	72.3%	256.9%									
Brand Wax test 1 - stick only	74.0%										
NO LUBRICANT	90.3%										
Finish Line Dry (on test now)											
Silca Hot wax X- (on test now)											
Candle wax (on test now)											
Average	**10%**	**27.3%**	**45%**	**72.3%**	**73%**	**78.1%**					
Top 5 Lubes Avg	**8%**	**22.3%**	**33%**	**54.4%**	**73%**	**117.0%**					
Worst 5 Lubes Avg	**2%**	**6.3%**	**#REF!**	**#REF!**	**87%**						

Red = extrapolated data as test stopped before testing this block. Block 4 - 2x block 2 result. Block 6 = 2 x Block 4 result

Wear by block

WAX / DRIP / DRIP - WET / GREASE

Lube	Block 1 - No Contamination	Block 2 - Dry Cont.	Block 3 - No Cont.	Block 4 - Wet cont.	Block 5 - No Cont.	Block 6 - Extreme Cont.	Ultegra chains blocks 1 to 5	Ultegra cassettes block 1 to 5	Ultegra chain rings blocks 1-5	Ultegra chains extrapolated to 10,000km	Ultegra cassettes extrapolated to 10,000km	Ultegra chain rings extrapolated to 10,000km	Dura Ace Chains	Dura Ace cassettes	Dura ace chain rings	Dura Ace chains extrapolated to 10,000km	Dura Ace cassettes extrapolated to 10,000km	Dura ace chain rings extrapolated to 10,000km	GRX 810 chains Dry contamination block	GRX 810 cassettes Dry Contamination Block
Silca Hot Melt	0.3%	1.7%	4.6%	8.0%	4.0%	8.6%	0.20	0.1	0.03	0.4	0.2	0.07	0.2	0.2	0.03	0.4	0.4	0.07	0.2	0.10
Shipwreckwax New Formula	0.0%	1.1%	0.6%	9.1%	1.1%	19.7%	0.2		0.1	0.4	0.2	0.07	0.2	0.2	0.03	0.4	0.4	0.07	0.2	0.1
Race 4+1	0.3%	0.0%	0.9%	18.3%	2.0%	28.0%														
Tflektn Mariposa flower power wax	2.3%	2.3%	0.0%	32.0%	11.4%	32.0%	0.49	0.245	0.081	0.98	0.49	0.162	0.49	0.49	0.0811	0.98	0.98	0.162	0.23	0.115
Tru Tension Tungsten All Weather	14.0%	10.0%	12.0%	31.0%	18.0%	32.0%	0.85	0.4	0.14	1.7	0.9	0.28	0.85	0.9	0.14	1.70	1.70	0.28	0.5	0.25
Race 11+1	0%	1.4%	0.9%	4.6%	2.0%	35.7%														
Session S-wax	14.6%	5.7%	5.1%	32.6%	26.6%	36.5%														
Ceramic Spd UFO Drip New Formula	2.3%	3.4%	0.6%	32.3%	17.0%	36.6%	0.56	0.3	0.09	1.11	0.56	0.19	0.6	0.6	0.09	1.1	1.1	0.19	0.3	0.16
Silca Synergetic	0.0%	18.6%	24.3%	27.4%	21.7%	55.3%	0.92	0.46	0.15	1.8	0.9	0.31	0.9	0.9	0.15	1.80	1.83	0.30	0.9	0.46
Shimano Factory Grease + NFS	10.9%	27.4%	14.3%	28.6%	72.5%	57.2%														
Rex Fric Shun	12.6%	27.4%	14.3%	28.6%	72.5%	57.2%	1.28	0.6	0.21	2.6	1.3	0.43	1.3	1.3	0.21	2.6	2.6	0.427	1.4	0.68
Silca Super Secret Drip	2.9%	4.6%	0.0%	36.9%	29.4%	66.0%	0.73	0.4	0.12	1.5	0.7	0.24	0.73	0.7	0.12	1.47	1.47	0.24	0.2	0.12
Tru Tension Tungsten Race (D.A)	5.4%	2.0%	2.3%	38.3%	30.0%	36.0%	0.78	0.39	0.13	1.6	0.8	0.26	0.78	0.8	0.13	1.56	1.56	0.26	0.2	0.10
Molten Speed Wax Original Formula	0.0%	12.0%	0.0%	8.0%	0.0%	78.0%	0.20	0.1	0.03	0.4	0.2	0.07	0.2	0.2	0.03	0.4	0.4	0.07	0.6	0.30
Emsave	19.1%	17.4%	2.0%	45.1%	34.3%	90.3%	1.13	0.6	0.19	2.3	1.1	0.38	1.13	1.1	0.19	2.3	2.3	0.38	0.9	0.44
Squirt	19.1%	22.0%	18.0%	46.9%		97.7%	1.39	0.7	0.23	2.7	1.4	0.45	1.39	1.4	0.23	2.7	2.7	0.45	1.1	0.55
Rock N Roll Gold	8.9%	29.0%	20.0%	65.0%	58.0%	116.0%	1.45	0.7	0.24	2.9	1.4	0.48	1.4	1.4	0.24	2.9	2.9	0.48	1.5	0.73
Cycle Star Gold	22.3%	30.9%	45.1%	81.8%		123.6%	1.64	0.8	0.27	3.28	1.64	0.55	1.64	1.6	0.27	3.28	3.28	0.55	1.5	0.77
Shimano Factory Grease + RNR gold	10.9%	29.0%	20.0%	65.0%		130.0%														
Brand Wax test 2 (dissolved in)	35.7%	33.6%	28.6%	67.2%		134.6%	1.65	0.8	0.27	3.27	1.63	0.54	1.63	1.6	0.27	3.3	3.3	0.54	1.7	0.84
White Lightning Epic Ride	22.9%	33.7%	104.3%	67.4%		134.8%	2.22	1.1	0.37	4.4	2.2	0.74	2.22	2.2	0.37	4.4	4.4	0.74	2.8	1.41
Muc Off Hydro Dynamic	27.6%	98.9%		197.8%		197.8%	2.5	1.3	0.42	5	2.5	0.83	2.5	2.5	0.42	5	5	0.83	4.9	2.47
AB Graphene Wax	22.0%	38.3%	24.0%	103.6%		207.7%	1.59	0.79	0.26	3.2	1.6	0.53	1.59	1.6	0.26	3.17	3.17	0.53	3.0	1.51
Muc Off Nano	37.7%	107.7%		215.4%		430.8%	3.64	1.8	0.61	7.3	3.6	1.21	3.64	3.6	0.61	7.27	7.27	1.21	5.4	2.69
Silca Synergetic	2.0%	7.7%	19.7%	73.4%			1.28	0.64	0.21	2.6	1.3	0.43	1.28	1.28	0.21		2.56	0.42	0.89	0.19
Rex Black Diamond	2.3%	11.1%	17.0%	42.6%	24.3%		0.97	0.465	0.16	1.94	0.97	0.32	0.97	0.97	0.16	1.94	1.94	0.32	0.55	0.27
Revolutes	4.0%	18.3%	17.4%	81.7%			1.20	0.6	0.20	2.4	1.2	0.40	1.2	1.2	0.20	2.4	2.4	0.40	0.9	0.45
Allied GRAX	22.0%	18.3%	18.3%	43.0%			1.25	0.63	0.21	2.5	1.25	0.42	1.25	1.25	0.21	2.5	2.5	0.42	0.9	0.45
Shimano Factory Grease	10.9%	20.8%																		
Rex Domestique	5.1%	28.6%	15.1%	43.7%			1.16	0.58	0.19	2.32	1.16	0.38	1.16	1.16	0.19	2.32	2.32	0.38	1.43	0.81
Boneshield T9- Aerosol	11.1%	32.3%	22.3%	47.4%			1.41	0.7	0.235	2.82	1.40	0.48	1.4	1.4	0.24	2.8	2.8	0.48	1.6	0.80
Wolf tooth WT-1 on Factory Grease	17.7%	37.1%	48.3%																	
Wolf tooth WT-1	16.9%	52.9%	54.0%	105.8%			2.06	1.0	0.34	4.1	2.0	0.68	2.06	2.1	0.34	4.10	4.10	0.68	2.6	1.30
Muc Off C3 Ceramic Dry	10.6%	61.7%	52.3%																	
Muc Off Luxlicious AF	8.9%	78%		156.0%			2.15	1.07	0.36	4.3	2.14	0.72	2.15	2.15	0.36	4.3	4.3	0.72	3.9	1.95
Prolongcycle One	7.9%	95%																		
Dumonde Tech Pro X-Lite	16.0%	68.9%	21.7%																	
Brand Wax test 1 - stick only	74.0%																			
NO LUBRICANT	90.3%																			
Finish line Ceramic Wax	72.3%																			
Finish Line Dry (on test now)																				
Silca Hot wax X- (on test now)																				
Candle wax (on test now)																				
Average All lubes	**11.0%**	**19.6%**	**15.6%**	**46.0%**	**25.0%**	**80.5%**	5000/row i	row i/2	row i/6	row i x 2	row j x 2	row k x 2	equals row i	equals row o	equals row o / 6	row o x 2	row p x 2	row q x 2	5000 / row k	row u / 2
Top 5 Lubes Avg	**0.5%**																			
Worst 5 Lubes Avg	**29.2%**																			
Top 5 Drip Lubes	**1.9%**																			
Worst 5 Drip Lubes Avg	**25.9%**																			

Blocks 1 to 5 - main test | Blocks 1 to 5 - main test | Blocks 1 to 5 - main test | Blocks 1 to 5 - main test | Blocks 2 Dry Contamination

If no data as did not make this far in test, double block 2 result

*If no data as did not make this far in test, double block 4 result, or 8x block 2 result

	Blocks 2 Dry Contamination			Block 4 Wet Contamination			Block 4 Wet Contamination			Block 6 Extreme Contamination			Block 6 Extreme Contamination		
Ultegra chain rings Dry Contamination Block	GRX 810 chains extrapolated to 10,000km	GRX 810 cassettes extrapolated to 10,000km	GRX 810 Chain ring sextrapolated to 10,000km	GRX 810 chains Wet contamination Block	GRX 810 cassettes Wet Contamination Block	GRX 810 chain rings Wet Contamination Block	GRX 810 chains extrapolated to 10,000km2	GRX 810 cassettes extrapolated to 10,000km3	GRX 810 Chain rings extrapolated to 10,000km	GRX 810 chains Extreme contamination Block	Grx 810 cassettes Extreme Contamination Block	GRX 810 chain rings Extreme Contamination Block	GRX 810 chains extrapolated to 10,000km4	GRX 810 cassettes extrapolated to 10,000km5	GRX 810 Chain rings extrapolated to 10,000km6
0.03	0.4	0.2	0.07	0.4	0.20	0.07	0.8	0.4	0.14	0.4	0.20	0.07	0.9	0.4	0.13
0.01	0.4	0.2	0.07	0.4	0.2	0.07	0.8	0.4	0.14	0.98	0.49	0.16	1.96	0.98	0.32
0.038	0.46	0.23	0.08	1.6	0.8	0.26	3.2	1.6	0.52	1.6	0.8	0.26	3.2	1.6	0.52
0.08	1.0	0.5	0.17	1.5	0.77	0.26	3.1	1.5	0.52	1.6	0.80	0.27	3.2	1.6	0.5
0.05	0.6	0.3	0.13	1.6	0.81	0.27	3.2	1.6	0.54	1.8	0.90	0.33	3.7	1.8	0.6
0.15	1.8	0.9	0.33	1.4	0.69	0.23	2.7	1.4	0.46	2.8	1.38	0.46	5.5	2.8	0.9
0.23	2.7	1.4	0.46	1.4	0.72	0.24	2.9	1.4	0.48	3.0	1.50	0.50	6.0	3.0	1.0
0.04	0.5	0.2	0.08	1.8	0.92	0.31	3.7	1.8	0.62	3.3	1.65	0.55	6.6	3.3	1.1
0.03	0.4	0.2	0.07	1.9	0.96	0.32	3.8	1.9	0.64	3.8	1.92	0.64	7.7	3.8	1.3
0.10	1.2	0.6	0.20	0.4	0.20	0.07	0.8	0.4	0.13	3.9	1.95	0.65	7.8	3.9	1.3
0.15	1.7	0.9	0.27	2.3	1.13	0.38	4.5	2.3	0.75	4.5	2.28	0.75	9.0	4.5	1.5
0.19	2.2	1.1	0.37	2.4	1.22	0.41	4.9	2.4	0.83	4.9	2.44	0.81	9.8	4.9	1.6
0.24	2.9	1.5	0.48	3.3	1.63	0.54	6.5	3.3	1.08	6.5	3.25	1.08	13.0	6.5	2.2
0.25	3.1	1.5	0.51	3.1	1.56	0.52	6.3	3.1	1.04	6.3	3.13	1.04	12.5	6.3	2.1
0.28	3.4	1.7	0.56	3.3	1.67	0.56	6.7	3.3	1.11	6.7	3.33	1.11	13.3	6.7	2.2
0.47	5.7	2.8	0.94	6.3	3.13	1.04	12.5	6.3	2.08	12.5	6.25	2.08	25.0	12.5	4.2
0.82	9.9	4.9	1.65	9.9	4.95	1.65	19.8	9.9	3.30	19.8	9.90	3.30	39.6	19.8	6.6
0.50	6.0	3.0	1.01	5.2	2.59	0.86	10.4	5.2	1.73	10.4	5.19	1.73	20.7	10.4	3.5
0.90	10.8	5.4	1.80	10.0	5.00	1.67	20.0	10.0	3.33	20.0	10.00	3.33	40.0	20.0	6.7
0.07	0.8	0.4	0.14	3.7	1.83	0.61	7.4	3.7	1.22	7.4	3.70	1.22	14.8	7.4	2.4
0.09	1.1	0.54	0.18	2.13	1.065	0.355	4.26	2.13	0.355	4.26	2.13	0.71	8.52	4.26	1.42
0.15	1.8	0.9	0.3	3.08	1.54	0.51	6.16	3.08	1.02	6.16	3.08	1.03	12.3	6.16	2.06
0.15	1.8	0.9	0.30	2.1	1.05	0.35	4.2	2.1	0.70	4.2	2.1	0.7	8.4	4.2	1.4
0.24	2.9	1.62	0.44	2.18	1.09	0.36	4.4	2.18	0.72	4.37	2.18	0.73	8.7	4.37	1.46
0.27	3.2	1.6	0.54	2.4	1.19	0.40	4.8	2.4	0.80	4.7	2.37	0.79	9.4	4.7	1.6
0.44	5.2	2.6	0.88	5.2	2.64	0.88	10.4	5.2	1.73	10.4	5.30	1.77	20.8	10.6	3.4
0.65	7.9	3.9	1.30	7.9	3.9	1.3	15.8	7.9	2.6	15.8	7.9	2.6	31.6	15.8	5.2
row u / 6	row u x 2	row v x 2	row w x 2	5000 / row l	row AA / 2	row AA / 6	row AA x 2	row AB x 2	row AC x 2	5000 / row m	row AG / 2	row AG / 6	row AG x 2	row AH x 2	Row AI x 2