

6mmARC_103ELD-X_ALL-Powders_2-28_20inch_8-9-20-Node6

WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnell and material. The computer-results had to be checked against data available in current loading manuals.

LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.

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User Data:	Date:9-Aug-2020	Time:23:24:27	File: *.dat
Comment	6mmARC_103ELD-X_ALL-Powders_2-28_20inch_8-9-20-Node6		
Cartridge / Caliber	6 mm ARC	Bullet	.243, 103, Hornady ELD-X
Maximum Average Pressure, allowed	58740 psi.	4050 bar (Piezo)	with boattail
Groove Caliber	0.242 in.	6.15 mm	103.0 gr. 6.67 gm
Case Capacity, overflow	34.81 gr. H2O	2.26 cm³	1.260 in. 32.0 mm
Case Length	1.490 in.	37.85 mm	Bullet Seating Depth 0.470 in. 11.94 mm
Cartridge O.A. Length	2.280 in.	57.91 mm	Barrel/Tube Length 20.0 in. 508.0 mm
Shot Start / Init Pressure	3626 psi.	250.0 bar	Cross Section Area of Bore 0.04535 in.² 0.2926 cm²
Propellant type	Alliant Reloder-15		
Charge Weight	27.25 gr.	1.766 gm	Load Density 230.4 gr./in.³ 0.911 gm/cm³
Heat of Explosion, Potential	258.5 J/gr.	3990 J/gm	Energy Density of Charge 59551 J/in.³ 3634 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv 1.238
Burning Rate Factor Ba	0.52 1/s		Weighting Factor 0.67
Burning Function Limit Z1	0.395		Prog.-/ Degressivity Factor a0 1.542
Factor b	1.631		Bulk Density 232.7 gr./in.³ 0.920 gm/cm³
Calculated and Estimated Data:			
Bullet Shank Seating Depth	0.29 in.	7.37 mm	Capacity Displaced by Seated Bullet 0.0196 in.³ 0.321 cm³
Useable Case Capacity	0.1183 in.³	1.939 cm³	Bullet Travel at Muzzle Exit 18.98 in. 482.09 mm
Loading Ratio("Density") / Filling	99.0 %		Charge Fraction Burnt at Shot Start 1.26 %
Predicted Data:			
Maximum Chamber Pressure	55301 psi.	3813 bar	Bullet Travel at Pmax 1.41 in. 35.8 mm
at Muzzle Exit:			
Bullet Velocity	2587 fps.	788.5 m/s	Pressure at Muzzle 8771 psi. 605 bar
Bullet Energy	1531 ft.lbs.	2075 Joule	Bullet Barrel Time 1.095 ms
Propellant Burnt	98.1 %		Ballistic Efficiency 29.5 %

WARNING: Near Maximum Average Pressure - unknown tolerances may cause dangerous pressures !

Real maximum (peak) of pressure is reached while bullet moves within barrel.

End of combustion occurs after the bullet's base passes muzzle.

Predicted data of selected powders which all will match the barrel time of the above stated load of approximately 1.095 milliseconds

CAUTION! - D A N G E R ! : Table may exceed limits of recommended loads ! Pressures exceeding SAAMI or CIP specs are underlined!
Be aware that the powders listed may be totally unsuitable for the given cartridge !

In reality the order of loads may vary due to lot-to-lot variations of propellants and other components.

Propellant type	L.R./Filling %	Charge Weight Gramm	Grains	Muzzle Vel. m/s	fps	Max. Pressure bar	psi	Prop.Burnt %	B_Time ms
Alliant Reloder-26	114	2.19	33.8	806	2645	3588	52034	95.7	1.095
ReloadSwiss RS 60	104	1.94	29.9	802	2630	3573	51824	99.2	1.095
Somchem S365	112	1.98	30.6	800	2626	3620	52509	99.5	1.095
Elcho 17	103	1.93	29.8	799	2622	3598	52180	98.6	1.095
Alliant Reloder-17	103	1.93	29.8	799	2622	3598	52180	98.6	1.095
Accurate 4064	103	1.80	27.8	798	2620	4044	58652	100.0	1.095
Accurate 4350	109	1.95	30.1	798	2619	3780	54830	97.4	1.095
ReloadSwiss RS 62	108	2.02	31.2	798	2618	3676	53315	96.7	1.095
Alliant Reloder-16	111	1.93	29.8	798	2618	3635	52722	98.0	1.095
Norma MRP	115	2.14	33.0	797	2615	3622	52530	92.5	1.095
Accurate 2495	98	1.71	26.3	796	2613	4090	59322	100.0	1.095
Alliant Reloder-23	120	2.10	32.4	796	2612	3619	52494	97.9	1.095
Vihavuori N550	106	1.93	29.7	794	2606	3744	54301	97.0	1.095
ReloadSwiss RS 52	99	1.83	28.2	794	2606	3720	53947	99.6	1.095
Bofors RP3	102	1.84	28.4	794	2604	3876	56218	99.3	1.095
Norma 203 old	102	1.84	28.4	794	2604	3876	56218	99.3	1.095
IMR 4895	98	1.75	27.0	792	2598	3804	55166	98.6	1.095
Alliant Reloder-25	123	2.18	33.7	792	2597	3634	52711	94.6	1.095
Norma URP	109	1.92	29.6	792	2597	3691	53530	97.0	1.095
Bofors RP19 ~approximation	109	1.92	29.6	792	2597	3691	53533	97.0	1.095
Rottweil R903	104	1.84	28.4	791	2597	3879	56254	99.2	1.095
IMR 4831	115	1.96	30.2	791	2596	3747	54349	97.4	1.095
Norma 217	135	2.38	36.7	790	2592	3661	53097	90.3	1.095
Hodgdon BL-C2	94	1.83	28.2	790	2592	3812	55292	99.4	1.095
Alliant Reloder-22	117	2.11	32.6	790	2591	3652	52968	90.8	1.095
Raufoss RA15	117	2.11	32.6	790	2591	3652	52968	90.8	1.095
Bofors RP5/NP ~approximation	117	2.11	32.6	790	2591	3652	52968	90.8	1.095
Winchester WXR	120	2.12	32.7	790	2591	3657	53041	90.6	1.095
Bofors RP15	120	2.12	32.7	790	2591	3657	53041	90.6	1.095
Bofors RP30	127	2.26	34.9	790	2591	3655	53009	88.7	1.095

continued

**Predicted data of selected powders which all will match the barrel time
of the above stated load of approximately 1.095 milliseconds**

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Be aware that the powders listed may be totally unsuitable for the given cartridge !
In reality the order of loads may vary due to lot-to-lot variations of propellants and other components.

Propellant type	L.R./Filling %	Charge Gramm	Weight Grains	Muzzle Vel. m/s	Muzzle Vel. fps	Max. Pressure bar	Max. Pressure psi	Prop.Burnt %	B_Time ms
Norma MRP 2	127	2.26	34.9	790	2591	3655	53009	88.7	1.095
Accurate 2520	95	1.78	27.5	789	2590	3904	56618	100.0	1.095
Lovex D073.6	97	1.78	27.5	789	2590	3904	56618	100.0	1.095
Norma 203B	100	1.78	27.4	789	2589	3814	55310	98.6	1.095
PB Clermont PCL 511	105	2.00	30.8	789	2589	3672	53252	94.8	1.095
SNPE Vectan SP 11	101	1.87	28.8	789	2588	3700	53665	98.3	1.095
Hodgdon CFE223	93	1.84	28.4	789	2588	3706	53752	98.7	1.095
Winchester 760	103	1.94	29.9	789	2588	3690	53518	93.9	1.095
Hodgdon H414	103	1.94	29.9	789	2588	3690	53518	93.9	1.095
Ramshot Hunter	109	2.00	30.9	789	2588	3673	53273	94.8	1.095
Alliant Reloder-15	99	1.77	27.3	789	2587	3812	55295	98.2	1.095
Bofors RP11 ~approximation	99	1.77	27.3	789	2587	3812	55295	98.2	1.095
Raufoss RA11	99	1.77	27.3	789	2587	3812	55295	98.2	1.095
Vihtavuori N560	116	2.12	32.7	788	2587	3655	53005	87.6	1.095
PB Clermont PCL 518	109	2.01	31.1	788	2586	3672	53252	94.3	1.095
IMR 3031	99	1.65	25.4	788	2585	3774	54743	100.0	1.095
Somchem S355	104	1.81	27.9	787	2584	3863	56032	99.0	1.095
Ramshot Big Game	98	1.86	28.8	787	2583	3704	53723	98.2	1.095
Lovex S071	126	2.13	32.8	787	2582	3778	54795	95.2	1.095
Accurate 3100	119	2.13	32.8	787	2582	3778	54795	95.2	1.095
ReloadSwiss RS 70	110	2.09	32.3	787	2582	3637	52751	92.7	1.095
Winchester 748	91	1.74	26.9	786	2580	3749	54379	99.7	1.095
Hodgdon H4895	95	1.70	26.3	786	2578	3827	55499	99.0	1.095
Hodgdon H380	101	1.83	28.3	786	2577	3846	55783	97.0	1.095
Accurate MAGPRO	117	2.22	34.3	785	2575	3682	53406	85.4	1.095
ADI AR 2206H	96	1.71	26.3	784	2573	3829	55535	98.6	1.095
Somchem S385	115	2.07	31.9	784	2571	3763	54577	93.1	1.095
Lovex S062	101	1.75	26.9	783	2570	3892	56448	99.5	1.095
Lovex S070	109	1.92	29.6	783	2569	3867	56081	94.7	1.095
Somchem S321	91	1.75	27.1	783	2568	3859	55976	99.6	1.095
Hodgdon Hybrid 100V	111	1.92	29.6	783	2568	3676	53316	98.6	1.095
Norma 201	98	1.70	26.3	783	2567	3937	57094	99.5	1.095
Ramshot Wild Boar	94	1.78	27.5	782	2567	3785	54894	98.4	1.095
Rottweil R901	96	1.63	25.2	782	2567	4022	58333	100.0	1.095
Lovex D073.5	91	1.74	26.9	782	2566	3975	57650	99.9	1.095
Accurate 2460	91	1.74	26.9	782	2566	3975	57650	99.9	1.095
Alliant Reloder-19	113	2.01	31.1	781	2563	3684	53438	91.1	1.095
Rottweil R902	100	1.71	26.4	781	2561	3945	57220	99.5	1.095
PB Clermont PCL 507	93	1.73	26.6	780	2560	3811	55276	99.4	1.095
Norma 202	97	1.69	26.1	780	2560	3861	55998	100.0	1.095
SNPE Vectan SP 9	96	1.77	27.3	780	2560	3795	55046	98.5	1.095
ADI AR 2225	130	2.33	36.0	780	2559	3706	53745	90.7	1.095
Hodgdon Retumbo	130	2.33	36.0	780	2559	3706	53745	90.7	1.095
Vihtavuori N540	99	1.78	27.5	780	2558	3845	55774	100.0	1.095
Bofors RP4 NT ~approximation	109	1.97	30.4	779	2557	3751	54406	93.6	1.095
Elcho TR140 - preliminary data	100	1.84	28.4	779	2557	3824	55464	97.0	1.095
Lovex S065	107	1.87	28.8	779	2557	3884	56338	96.1	1.095
Bofors RP14 ~approximation	114	2.03	31.3	779	2557	3692	53548	91.0	1.095
SNPE Vectan SP 7	95	1.82	28.1	779	2556	3885	56343	96.9	1.095
PB Clermont PCL 516	96	1.83	28.2	779	2556	3791	54990	96.7	1.095
Alliant AR-Comp	94	1.63	25.1	779	2555	3818	55369	100.0	1.094
Bofors RP11 TZ ~approximation	94	1.63	25.1	778	2553	3811	55275	100.0	1.095
Rottweil R905	118	2.09	32.3	778	2552	3691	53526	88.0	1.095
Vihtavuori N530	92	1.65	25.4	778	2552	3811	55272	99.4	1.095
Vihtavuori N570	126	2.38	36.7	778	2552	3718	53922	79.7	1.095
IMR 7828	120	2.09	32.2	777	2549	3670	53224	87.4	1.095
IMR 7828 SSC	114	2.09	32.2	777	2549	3670	53224	87.4	1.095
Vihtavuori N135	106	1.71	26.4	777	2548	3887	56375	100.0	1.095
IMR 4320	100	1.75	27.0	776	2548	3693	53562	98.2	1.095
Vihtavuori N150	109	1.83	28.3	776	2548	3835	55624	99.6	1.095
Somchem S341	95	1.81	28.0	776	2547	3801	55123	98.4	1.095
ReloadSwiss RS 50	100	1.85	28.6	776	2546	3840	55693	95.1	1.095
ADI AR 2209	112	1.98	30.5	775	2544	3674	53290	90.4	1.095
IMR 8208 XBR	94	1.67	25.8	775	2544	3813	55297	99.3	1.096
Bofors RP4 ~approximation	110	1.97	30.4	775	2543	3701	53677	90.8	1.095
Norma 204	107	1.97	30.4	775	2543	3701	53677	90.8	1.095
Raufoss RA4	110	1.97	30.4	775	2543	3701	53677	90.8	1.095
Hodgdon H322	92	1.59	24.5	775	2543	3793	55009	100.0	1.094
IMR 4064	102	1.72	26.5	774	2541	3807	55210	98.1	1.095
Ramshot TAC	93	1.80	27.7	774	2540	3834	55614	96.2	1.095
ADI AR 2213	115	2.07	31.9	774	2538	3680	53371	87.4	1.095
Hodgdon VARGET	101	1.74	26.8	774	2538	3772	54705	97.8	1.095
ADI AR 2208	100	1.74	26.8	774	2538	3772	54705	97.8	1.095
Bofors RP7	105	1.84	28.4	773	2538	3873	56174	93.6	1.095

continued

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Propellant type	L.R./Filling %	Charge Weight Gramm Grains	Muzzle Vel. m/s fps	Max. Pressure bar psi	Prop.Burnt %	B_Time ms
Rottweil R907	105	1.84 28.4	773 2538	3873 56174	93.6	1.095
IMR 4007 SSC	102	1.84 28.5	773 2537	3874 56183	93.6	1.095
Vihtavuori N140	99	1.72 26.6	773 2535	3849 55822	100.0	1.095
IMR 4350	108	1.92 29.6	772 2534	3750 54396	93.2	1.095
Hodgdon H4350	110	1.92 29.7	772 2534	3751 54402	93.0	1.095
Ramshot X-Terminator	91	1.74 26.8	772 2533	3858 55958	98.5	1.095
Alliant Reloder-50	135	2.59 40.0	772 2532	3763 54576	78.8	1.095
Hodgdon H870	133	2.46 37.9	772 2531	3754 54449	82.0	1.095
SNPE Vectan SP 12	118	2.25 34.7	772 2531	3702 53690	87.1	1.095
PB Clermont PCL 517	118	2.25 34.8	771 2530	3705 53734	86.9	1.095
Alliant Reloder-10x	90	1.52 23.4	771 2530	3939 57126	100.0	1.095
Accurate 2015	93	1.59 24.6	771 2529	3988 57844	100.0	1.095
Vihtavuori N165	119	2.11 32.5	770 2527	3734 54152	91.9	1.095
Ramshot Magnum	116	2.24 34.6	770 2525	3704 53729	90.1	1.095
IMR 4451 Enduron	103	1.81 28.0	769 2523	3790 54963	94.0	1.095
Alliant Reloder-33	128	2.47 38.1	769 2523	3770 54685	79.4	1.095
Alliant Reloder-12	92	1.67 25.7	768 2521	3834 55611	100.0	1.096
Bofors RP3 NT ~approximation	103	1.83 28.2	768 2521	3755 54458	95.6	1.095
Bofors 12,7mmRA NC1214 Lot20115087	135	2.55 39.4	768 2520	3806 55200	72.2	1.095
Rottweil R904	111	1.96 30.2	768 2519	3747 54338	89.6	1.095
Bofors RP2 NT ~approximation	95	1.68 25.9	767 2518	3820 55405	98.9	1.095
Winchester Supreme 780	111	2.09 32.2	767 2516	3727 54056	90.5	1.095
Somchem S335	97	1.69 26.1	767 2516	3964 57487	100.0	1.095
Hodgdon H4831	118	2.05 31.6	767 2515	3723 54001	87.5	1.095
Hodgdon H4831 SC	114	2.05 31.6	767 2515	3723 54001	87.5	1.095
Bofors RP7 NT ~approximation	101	1.81 27.9	766 2514	3701 53677	94.1	1.095
Hodgdon Benchmark	93	1.63 25.2	766 2514	3853 55877	99.7	1.095
Lovex S060	96	1.66 25.6	765 2510	3838 55671	98.6	1.095
IMR 4166 Enduron	102	1.74 26.9	765 2509	3840 55694	94.3	1.095
IMR 4955 Enduron	115	1.99 30.8	765 2509	3767 54639	88.7	1.095
Bofors RP5 NT ~approximation	119	2.16 33.3	765 2508	3745 54314	84.5	1.095
Vihtavuori N160	119	2.03 31.4	763 2504	3770 54686	89.3	1.095
Somchem S361	111	2.10 32.5	763 2503	3835 55629	88.6	1.095
ADI AR 2206	95	1.67 25.8	763 2502	3842 55717	98.9	1.095
ReloadSwiss RS 80	129	2.49 38.4	763 2502	3807 55218	79.3	1.095
Vihtavuori N170	130	2.30 35.5	762 2501	3814 55310	81.1	1.095
Accurate 2700	102	1.90 29.3	761 2497	3926 56935	93.4	1.095
ADI AP 2214	119	2.20 33.9	761 2497	3747 54350	86.2	1.095
ADI AR 2217	125	2.20 33.9	760 2495	3752 54414	86.1	1.095
Hodgdon H1000	125	2.20 33.9	760 2495	3752 54414	86.1	1.095
SNPE Vectan SP 13	137	2.50 38.5	751 2465	3848 55814	78.7	1.095
PB Clermont PCL 513/520/9520	139	2.53 39.0	745 2446	3891 56439	76.5	1.095
ADI AR 2218	128	2.43 37.5	744 2442	3911 56718	73.6	1.095
Hodgdon 50BMG	134	2.42 37.3	740 2429	3905 56642	68.0	1.095
Hodgdon US 869	133	2.53 39.1	740 2427	3937 57096	71.9	1.095
Vihtavuori 24N41	127	2.40 37.1	739 2425	3913 56754	71.8	1.095
IMR 7977 Enduron	119	2.11 32.5	738 2420	3908 56685	78.6	1.095
Lovex D100	124	2.39 36.9	737 2419	3917 56814	74.8	1.095
Vihtavuori 20N29	136	2.62 40.4	737 2418	3971 57591	73.5	1.095
Accurate 8700	136	2.52 39.0	734 2407	3984 57784	75.9	1.095
Somchem 12.7-0	133	2.45 37.8	725 2377	4020 58307	67.7	1.095
TLP A 502(RH) ,test only	145	2.53 39.0	710 2330	4170 60478	59.7	1.095
NC A3502 ,test only	143	2.49 38.5	698 2290	4263 61828	53.6	1.095
V1734 7-multiperf ,test only	160	2.80 43.2	612 2007	5960 86439	32.9	1.095