



For a few weeks/months AP70 and AP100 have been very hard to find and the recent announcement from ADI indicates that production of 70/100 has gone the way of the Dodo.

Replacement powders are on the way but are not yet available. With AP100's replacement APS950 there is an estimated date for release of October 2019 (however accurate that turns out to be) but with the AP70 replacement (APS 650) there is no time-line except that it is expected to be available "later in the year" (2019)

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*Extract from ADI announcement May 21, 2019*

*While the replacements for AS30N and AS50N/AP50N have been available for some time (APS350 and APS450 respectively), we've continued to face significant challenges in delivering alternative propellants for our AP70N and AP100 customers that meet the performance characteristics you expect from ADI World Class Powders.*

*Most recently, we've made significant progress on a propellant that is suited to replace AP100 and we anticipate that this propellant, to be named APS950, should be available in the market by October, 2019. While we cannot currently provide a specific date that an AP70N comparable powder will be available, we expect this to be available a bit later this year and called APS650.*

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AP70N has long been my favourite for reloading 9MM, it has always performed well for me while others insist AP50 is better and some even preferring AP100.

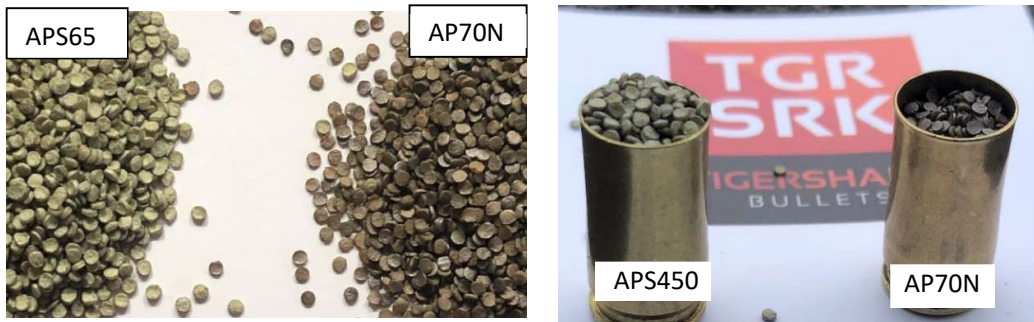
With the demise of AP70 the good news is that ADI have released the alternative to AP50 called APS450 and I thought it worthwhile to test it against 70 to see if it could bridge the gap till APS650 becomes available. Other powders were tested as part of the process to as well.



Powders tested: Alliant Power Pistol, Unique, Bullseye, ADI APS450, ADI AP70N, Hodgdon CFE Pistol

Choosing APS 450 as the local option and the closest of the 2 new powders to AP70 (replacement for AP30/AP50) I went about working up some initial loads based on the data ADI list at <http://www.adi-powders.com.au/pistol/> while most of this data is fairly conservative, and many of the loads don't make required power factor for particular shooting competitions, it's worthwhile to use as a base line.

A first look at APS450 you are struck by the substantial difference in colour with APS450 appearing very green against AP70's slate grey. The shape is very much the same although the disc sizes appear to be thicker than AP70. It is also noticeably "fluffier" than 70 and APS450 consequently takes up more room in the case



Note the difference in colour

Same weight of powder in each case

Preliminary testing of APS450 indicated that a decreased powder charge of around 0.2 grains is a good starting point for working up a load for APS450. However, further testing did not always agree and I found that in some bullet weights the load for 70 could be interchanged weight-for-weight with APS 450. This was a bit of a surprise as I thought the burn rate would be closer to 50 and consequently APS450 would require less powder to achieve a given power factor than AP70.

I tested all Tigershark 9MM weights and shapes and aimed to achieve a margin of 4-7 power factor over the minimum power factor of 125 required in IPSC competition. This margin gives a competitor a comfortable allowance, when tested at a match, for variations in data due to differences in firearms, chronographs, temperature etc. That said, power factor is only one thing when it comes to working up a good load for your firearm and sometimes higher power factor loads might work better (more accurate, quicker cycling). Other factors that could influence your decision are:

1. Reliability – does the pistol cycle (extracts and chambers a round ready to fire) every time with a given load?
2. Accuracy – is it “acceptable” for your particular discipline?
3. Consistent velocity – accuracy is what counts but huge variations in velocity could be an issue when measured at a match
4. Recoil – how quickly the sights come back on target?
5. Cleanliness – does the load burn completely or does it leave flakes of unburnt powder behind and does it seal the case in the chamber? (evidence of it not doing so will be evident with black burns on the case)
6. Consistent powder drop - does the powder meter well when reloading?

Chart 1: Summary of AP70N Vs. APS450

Pistol Used	Caliber	Bullet	Primer	Nom. Bullet Weight	Shape	Powder	Avg. Powder Charge	Avg OAL	Avg. Velovcity (FPS)	Power Factor
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	115	RN	AP70	4.4	28.1	1124.0	129.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	115	RN	APS 450	4.4	28.4	1148.0	132.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	RN	AP70	4.2	28.4	1040.0	127.9
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	RN	APS 450	4.0	28.4	1052.0	129.4
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	AP70	4.0	27.5	1059.0	130.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	APS 450	4.0	27.4	1058.0	130.1
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	APS 450	4.0	27.4	1079.3	132.8
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	RN	AP70	3.6	28.6	928.2	125.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	RN	APS 450	3.6	28.4	963.0	130.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	AP70	3.7	27.5	977.1	131.9
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	APS 450	3.6	27.4	967.5	130.6
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	145	RN	AP70	3.4	28.4	905.0	131.2
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	145	RN	APS 450	3.4	28.4	912.6	132.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	145	HP	AP70	3.4	27.4	907.0	131.5
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	145	HP	APS 450	3.4	27.4	909.0	131.8

Chart 2: Summary of Other Powders Tested

Pistol Used	Caliber	Bullet	Primer	Nom. Bullet Weight	Shape	Powder	Avg. Powder Charge	Avg OAL	Avg. Velovcity (FPS)	Power Factor
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	RN	CFE Pistol	4.8	28.4	1100.0	135.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	Unique	4.4	27.4	1024.2	126.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	Power Pistol	5.6	27.4	1170.6	144.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.4	27.4	998.0	122.8
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	CFE Pistol	4.4	27.4	1003.8	123.5
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.6	27.4	1027.6	126.4
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.6	27.4	1040.6	128.0
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	CFE Pistol	4.6	27.4	1043.0	128.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.7	27.4	1074.2	132.1
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.8	27.4	1104.4	135.8
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	123	HP	CFE Pistol	4.8	27.4	1105.0	135.9
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	CFE Pistol	4.8	27.4	1076.8	132.4
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	CFE Pistol	4.8	27.4	1073.2	132.0
CZ Shadow 2	9MM	TGRSRK	S & B (SP)	123	HP	Bullseye	3.8	27.4	1032.4	127.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Unique	4.0	27.4	974.0	131.5
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Unique	4.2	27.4	971.8	131.2
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Power Pistol	4.7	27.4	1032.2	139.3
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Power Pistol	5.2	27.4	1080.8	145.9
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	CFE Pistol	3.8	27.4	903.8	122.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	CFE Pistol	4.2	27.4	969.4	130.9
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Bullseye	3.4	27.4	940.4	127.0
CZ Shadow 2	9MM	TGRSRK	Federal (SP)	135	HP	Bullseye	3.8	27.4	1024.8	138.3



## In Summary

Although this was not specifically a test for accuracy, all powder combinations tested showed good to high accuracy with APS450 demonstrating a tighter grouping over AP70. Hodgdon CFE Pistol showed outstanding accuracy but was particularly sharp in recoil. CFE is likely a good option for precision shooting but its recoil would be a detriment in practical shooting events. APS450 is somewhat mild in recoil.

Surprisingly S&B primers showed a significant increase in velocity over Federal primers with APS450.

Impressive consistency with single figure Standard Deviation was achieved with APS450, Bullseye and CFE Pistol particularly with 123Gn Tigershark's

So how does APS450 rate based on the 6 key requirements?

1. Reliability – no issues
2. Accuracy - improvement over AP70
3. Consistent velocity – single figure standard deviation
4. Recoil – noticeably softer
5. Cleanliness – no noticeable unburnt powder or blackened cases
6. Consistent powder drop – no noticeable variation drop-to-drop

Until we see the new APS650, APS450 looks to be a good substitute for AP70. It shows great promise for accuracy, is clean and has a milder recoil than AP70.

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**WARNING:** The data contained in this document is not meant to be used solely as a definitive guide and simply reports data results based on testing carried out under specific conditions.

Reloading and the use of reloaded ammunition has some risk. Please ensure you have adequate knowledge and training before attempting to reload. You need to cross check all data with other reliable sources or published manuals before attempting to load. This data has been compiled though testing in particular firearms. Your firearm, although it may be the same model, could have variations that will affect the ballistics, performance and safety of any load.