Why you CANNOT rely on the MV on the Ammo Box!
By Doc Beech

Here are a number of reasons why you cannot trust the MV on the ammo box.

1. Their rifle and your rifle are not the same. Aside from having a different chamber, and possibly barrel length some other things are important too like the barrel twist rate, and how much wear was in the barrel. Was it just recently cleaned, has it ever been cleaned? You simply don't know anything about the rifle used in testing.

2. What were the conditions at the time of the test? Temperature has a physical effect on powder, which changes how it burns. Couple this, with the fact that different powders can vary in temp-stability quite a bit. You just don't know what the conditions at the time of testing were. Also a lot of factory ammunition is loaded with powder that is meter friendly. Meter friendly can often times be ball powder, which is less temperature stable than stick powder often times.

3. Unknown SD. You will often notice that while a MV is provided on the box an SD is not. It is not uncommon for factory ammunition to have an SD of 18 or higher. Sometimes as high as 40+. As such is the nature of metering powder. With marketing in mind, did they pick the high, low, or average end of the SD? We really don't know. You won't either until you test it for yourself. For hand loading, or to be considered a good SD most people look for around 10 or less. Having a high SD is often the nature of metered powder and factory loads.

4. What chronograph system did they use, and how did they back track to a muzzle velocity? A chronograph does not measure MV, it simply measures Velocity at the location it is sitting. As we covered earlier in the week, calculating MV is not as simple as everyone thinks. It requires a semi accurate BC. So who's BC was used to back track to the muzzle or did they even do that? Did they simply print the numbers off the chronograph? What kind of chronograph setup did they use? We know from Lab Testing, not all chronographs are created equal. Without knowing what chronograph was used, you have no idea the quality of the measurement. For more on that read here:
http://www.appliedballisticsllc.com/Articles/ChronographChapter.pdf

5. Do they update that data every lot? Or is it the same data from 2 years ago? Some manufacturers rarely if ever re-test and update information. Some update it every lot (ABM Ammo is actually tested every single lot for 1% consistency). Without knowing this information, you could be using data for years ago.

So in short, never trust the SD on a box of ammo, and here is why:
1. You have no idea about the rifle used.
2. You have no idea what the atmospheric conditions were at the time, and yes it matters a lot.
3. You have no idea the SD, and where they pulled the MV from in that SD. (Marketing plays a role here).
4. You have no idea the quality of chronograph they used.
5. You have no idea if they used the raw velocity, or back calculated the MV. The BC used to back track that data is also unknown.

So in short, never trust the MV on the box of ammo as anything more than what the factory was able to do in best case scenario. Unless they are willing to provide you with specific details of the test conditions and equipment like ABM Ammo does.

When you are using a Ballistic Solver such as the AB Apps or Devices integrated with AB. You need to know the MV to an accuracy down to 5 fps. Never use the printed MV off a box of ammo as anything more than a starting point, there are too many factors to account for. You must always either test for the MV with a chronograph, or use live fire carefully obtained data. The image below is from Modern Advancements in Long Range Shooting Vol 2 - Powder Measurement Chapter.