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# BEST PRACTICES FOR PURCHASING ARMORED VEHICLES

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## DURING THE DECISION MAKING PROCESS, CONSIDER THESE POINTS (NOT IN ANY ORDER OF IMPORTANCE).

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**OPTICS** - Armored windshields can cause distortion at the points of curvature, which makes it difficult to look left or right. The higher the level of protection, the greater the distortion, which can limit nighttime visibility and cause headaches and nausea.

You can test this effect yourself. As you sit in the driver's seat, put your hand on the outside of the windshield and look for distortion, especially at the corners. (You can also use a pad of lined paper instead of your hand.) Before purchasing any vehicle, make sure you test-drive it in the evening. What may not appear distorted in the daytime can sometimes look quite different in the evening. Also, if you're considering an SUV, you'll want to make sure you have safe, clear vision to the rear.

**WARRANTY** - Has the armor voided the vehicle manufacture warranty? If so, ask the provider if they warranty the vehicle.

**VEHICLE SELECTION** - You want to select a vehicle that blends into the environment and can accept the additional weight of the armor.

**LOAD CAPACITY** - Payload is the combined, maximum allowable weight of cargo, occupants, and optional equipment that the vehicle is designed to carry. Payload is an indication of how much armor the vehicle can accept.

A vehicle that significantly exceeds its payload capacity will be hard to maneuver, stop, and accelerate. An excessive payload also decreases the life expectancy of the car and makes it more susceptible to tire blowouts.

Ask the provider how much weight has been added to the vehicle. If the weight increase approaches 25 percent, the performance of the vehicle will be severely impaired.

**LOAD CAPACITY** - ISDA members should review Chapter 5 of the Security Driver Certification Guide - Executive Vehicles.

**MANUFACTURING PROCESS - SEAMS AND GAPS** - Seams and gaps are a result of the manufacturing process. They are also one of the most critical aspects of the manufacturing process. A seam is created when two pieces of armor are placed end-to-end to cover a section of the vehicle. This seam is vulnerable to the kinetic energy of the bullet. A round that finds a seam will displace the armor and penetrate the vehicle. Therefore, a seam should be overlapped by 1-2 inches to prevent penetration.

A gap is a "ballistic hole" not covered by armor due to the difficulty of placement, such as a roof rail, windshield, or door pillar post. Ask your provider to explain their policies and practices regarding

seams and gaps: Is the vehicle completely armored? For example, in an SUV, is the back window protected? ISDA members should review Chapters 12 and 13 of the Security Driver Certification Guide - Armored vehicles

**ARMOR LEVEL** - Ballistic standards indicate the type of round the vehicle or material will stop, and how many rounds it can withstand. There can be confusion concerning the various ballistic standards, the levels of armor, and what they can and cannot do. Each level indicates the protection provided for

- type of weapon
- caliber of round
- distance the round was shot from
- the number of rounds fired within a given area.

The problem is that the standards are not the same. For instance, the ballistic capability of Level 2 Armor for one standard may not be the same ballistic capability of Level 2 in another standard. Be sure to ask the provider:

- What caliber rounds does it the armor stop?
- From what distance will they stop the round?
- How many rounds will it stop?
- In what area of the vehicle will they stop them?

**CERTIFIED BALLISTIC** - ISDA members should review Chapters 14 and 15 of the Security Driver Certification Guide - Ballistics Standards and Testing

**SPARE PARTS** - The simple fact is that parts – especially brakes – wear out faster on a security vehicle than on a normal vehicle. Ask the provider what, if any, spare parts are offered.

**TIRES** - Other than the armor, tires are the most important part of an armored vehicle. History shows that most problems with armored vehicles start with the tires (specifically the front tires) being unable to handle the vehicle's additional weight. The armorer must determine the weight on each tire. Given the cost of the armored vehicle, this is not asking for much.

**RUN FLATS** - Run flats provide the ability to drive for miles on a flat tire. The problem is that they are not easy to install or remove. Most often, they come with a special piece of equipment that makes that task easier.

**BRAKING** - An increase in weight also decreases brake life. The energy the brakes must absorb and dissipate is a function of the vehicle's weight and changes with speed. Find out what the manufacturer does to compensate for the additional energy the brakes must absorb.

**MISCELLANEOUS** - Driving 10,000 miles in a non-armored vehicle is not the same as driving 10,000 miles in an armored vehicle. The additional weight of the armor puts a strain on the vehicle systems – brakes, cooling, and transmission – shortening the vehicle's maintenance cycle.

Ensure that the vehicle's active safety systems are functional: ABS, traction control, tire pressure monitoring system (TPMS), etc.

If you are purchasing an SUV, the combination of a high center of gravity (CG) (that is, weight above the windshield) and low tire pressure can create an extremely unsafe condition. It's essential to ensure the TPMS is working accurately. ISDA members should review TPMS article.

## SOME QUESTIONS TO CONSIDER

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What vehicle will meet the intended use standards, blend in, and can handle the weight and payload required once armored without violating OEM safety standards?

What level of armor is needed?

What builder can certify their armoring and provide a reliable warranty while not violating the OEM warranty?

If for use outside the US, what about duties and use taxes locally?

What about servicing the vehicle in-market?

## WHEN CONSIDERING AN ARMORED CAR PURCHASE, ALLOCATE TIME AND RESOURCES TO:

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Educating yourself on ballistic standards & armor defeat levels

Determine your true threat level for the locale under consideration

Construct a detailed RFQ and ask for specific international armor standards, type of materials to be used (both opaque and transparent armor), weight addition (at net) of armor vs. vehicle payload, warranty information, testing protocols, laboratory

Certifications of tested materials and a lists of referrals for starters

Be highly analytical of all information received on bids—compare every detail and get clarification when you have doubts