This is a good question and the mechanism behind the interaction is actually quite interesting and complex. The simple answer is “YES, it will work. They are compatible”, but you seem to be interested in some of the actual (not just a salesman’s assurances). I will try to provide some scientific background, without ‘geeking out’ too hard in the brief explanation and overview.

ZDDP (Zinc dialkyl dithiophosphate) has been a widely used oil additive for a very long time. The biggest benefit from ZDDP is the versatile functionality as an: antioxidant, corrosion inhibitor, and antiwear reagent. ZDDP attaches chemically to the metal surface to form a protective film on contacting surfaces. ZDDP, under conditions of heat, forms polyphosphates on the surface as protective layer. Due to its composition ZDDP is a major source of sulphur and phosphorus in the lubricant, causing catalytic converter poisoning. The high chemical activity of the ZDDP molecule also makes it biologically hazardous when it is released into the environment, particularly for aquatic life. The antiwear film formed controls two-body wear in critical automotive engine components, like the piston ring-cylinder liner contact and the valvetrain, particularly in older vehicles. The protective function is the result of the polymeric and viscous tribofilms ZDDP forms, with a thickness in the range of 0.05-0.5 µm. However, the tribofilm can deteriorate quickly when local temperatures exceed 250°C.

TriboTEX nanoparticles work in a fundamentally different way from ZDDP in the mechanism of attachment and porous layer formation. TriboTEX sheets are attached to the surface mechanically, particle-by-particle, resulting in a porous coating that forms on the surface. In reality, at the molecular level there is some competition at the metal interface between ZDDP and TriboTEX nanosheets. The competition however does not impede the function of either additive. The mechanical attachment of the larger TriboTEX nanosheets prevents the adherence of ZDDP to the metal surface at that specific anchor point, but ZDDP molecules are able to access the surface in between the large pores as the layer builds. In a sense the ZDDP provides an initial and continued protection of metallic surfaces as the much slower formation of the TriboTEX substrate is taking place. This synergistic cooperation with ZDDP has been demonstrated in peer reviewed scientific literature [Tribology International 73 (2014) 167–176] using natural materials that are used as a blueprint for synthesizing the TriboTEX nanosheet platform. Once coating formation has occurred and TriboTEX nanosheets are capped with a protective DLC layer, ZDDP will not be able to displace the protective coating. However, it will freely attach to any metallic surfaces where it can go with the lubricant.

I hope that this provides the answers you were looking for without getting too technical.

Please feel free to follow up with any additional questions.

Enjoy your day.

Vladimir Borisov, PhD