Electroless nickel-phosphorous coatings are widely used in many industrial applications because of their unique properties, including high wear resistance, high corrosion resistance, high hardness, and toughness. These properties, along with good lubrication, are obtained by combining nano-sized particles as a reinforcing phase inside the Ni-P matrix, produced by an electroless deposition process. The combined properties of the Ni-P coating are mainly improved and sometimes new features are added to the coating performance. For this purpose, different nanoparticles, such as nano-SiC, WC, Al₂O₃, TiO₂, and ZnO, increase hardness particles in the coatings, and nanoparticles such as PTFE, MoS₂, and graphite increase lubrication. Nanoparticles are added for the coatings. Out of these nanoparticles, PTFE has got aroused tremendous interest due to its properties, such as low surface energy and lower friction coefficient. (Good being for non-stick surfaces or dry lubricants), anti-fouling properties, and very good wear and corrosion resistance. Ni-P-PTFE can be used as an anti-sticking coating. Condensed, The condensed fluorine atoms in these molecules at-in the outer layer are the main source of the physical properties of PTFE, polymer like such as its low surface energy and its remarkably lower friction coefficient. By co-deposition of PTFE in the matrix of the coating, the properties of both Ni-P and PTFE can be used simultaneously. PTFE has excellent anti-stick properties due to the low surface energy of PTFE polymer (18.6 mN/m). The serious problem of the formation of deposits resembling limestone on the surfaces of heat-exchange exchangers or heat-exchange elements is a serious problem. These sediments are one of the nature's inherent problems in the designation and operation of many types of production and processing equipment and processes. Unasked for, These unwanted sediments can affect the equipment in two ways:

- The lower thermal conductivity of the formed sediments can increase heat-transfer resistance for heat-transfer and thereby reducing the heat-exchanger efficiency of heat-exchanging exchangers.

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Comment [A1]: In the passive voice, adverbs of manner are generally placed between the helping and main verbs or after the verb phrase. For example, The heart tissue was carefully examined to The heart tissue was examined carefully.

Comment [A2]: To use the colon correctly, you must make sure that the sentence that comes before the colon is a complete, grammatical sentence.
Fouling the ducts reduces the cross-sectional area of the fluid path, causing the increased friction becomes higher, causing an increase of a pressure drop across the system.

Any methods for reducing such sedimentary build-up can decreasing costs. It was found that the adhesion of the formed such sediments on the surfaces with low surface energy is poor. Therefore, many polymeric coatings have been used. The lower thermal conductivity, and low wear resistance as well as poor adhesion of the substrate of the conventional polymer coatings have limited their industrial applications. Since Ni-P-PTFE coating is metallic-based on a metallic composite, its thermal conductivity, mechanical strength, and wear-resistant properties are much bigger-better than PTFE coatings, while it also has a less low surface energy.