Research on Internal Coatings and Processes of Aluminum Alloy Drill Pipe

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Abstract: This article combines the characteristics of aluminum alloy materials to design a coating formula suitable for the internal coating of aluminum alloy drill pipes. The formula achieves low-temperature curing while retaining the original anti-corrosion performance of the coating, ensuring that the aluminum alloy drill pipe body is not affected. We also conducted research on the low-temperature curing process of the internal coating of aluminum alloy drill pipes, including surface blasting treatment effect, spraying and curing process research, and determined the blasting process, spraying parameters and curing temperature. Type tests were conducted on the internal coating of aluminum alloy drill pipes, including adhesion, chemical corrosion resistance, high temperature resistance, roughness, and wear resistance. The performance of the coating was analyzed, and the tests showed that it has excellent anti-corrosion performance. The inner surface roughness is greatly reduced, which can save 20-30% of drilling power. While protecting the service life of aluminum alloy drill pipes, it also saves water horsepower, meeting the requirements for the usage of aluminum alloy drill pipes in drilling.