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**Application of  
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surfactant in  
trenchless drilling  
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**Application of solubilizing surfactant in trenchless drilling fluid**

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**ABSTRACT:** In trenchless construction, the dissolution rate of drilling fluid mixing is too slow, which requires a long time to be pre-hydrated and dissolved. In actual construction, people have to put incompletely dissolved drilling fluid into the hole ahead of time. The drilling fluid with incomplete performance can not achieve the expected effect. It not only affects the quality of the project, wastes materials, but also sometimes brings adverse effects. Aiming at this problem, solubilizing surfactant which is the key factor affecting the solubility of drilling fluid was found out. Adding surfactant in drilling fluid can reduce the wetting speed of bentonite powder and prevent it from caking when mixing. At the same time, and the mutual exclusion between fat molecules and water molecules is eliminated, so that drilling fluid additive can quickly wet and disperse in the liquid. Through the solubility test, the solubilization efficiency of different surfactants was compared, the suitable surfactants were selected and the efficient instant drilling fluid system was developed. Compared with common trenchless drilling fluid system, the apparent viscosity of drilling fluid increased by 65% in 50 minutes.

**Key words:** Trenchless; Drilling fluid; Surfactant; Solubilizing