

## The effect factors of the pour point of crude oil

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The crude oil is a kind of complicated mixture, so there is actually no freezing point for it. However, it is often to use freezing point to describe the fluidness of crude oil in China. The freezing point is the highest temperature at which oil will stop flowing under specific test conditions. There is another definition for the fluidness of crude oil — pour point, which is the lowest temperature at which oil will flow freely under its own weight under specific test conditions [1]. The pour point will usually higher than freezing point for a crude oil because crude oil is usually not a crystalloid.

The authors carried out an investigation on freezing point using 92 samples of crude oil from Tarim basin and 61 samples of crude oil from Junggar basin. The results are completely different for the two basins in China (Fig. 1 and Fig. 2). The freezing point is positively related to wax content for the 92 samples from Tarim basin, but negatively related to the content of resin and asphaltene. However, there are no obvious relationships between freezing point and content of wax, resin and asphaltene.

Based on the result, the authors suggest that the freezing point of crude oil is mainly controlled by wax content if the wax content is not too low. With decreasing temperature, the waxes generally crystallize as an interlocking network of fine sheets, thereby entrapping the remaining liquid fuel in cage-like structures [1-2]. It is good explanation why the freezing point of crude oil can be controlled by wax. So it is widely accepted that flow improvers affect the crystal growth, modify the wax crystal structure and prevent the interlocking of wax crystals, thus enhancing the flow properties of crude oil [2]. However, it might be also controlled by other factors such as quantity and types of aromatics and heterocyclic compounds when wax content is low [3-4].

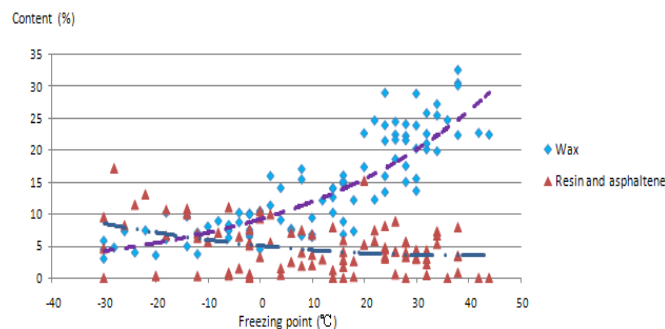


Fig. 1. The scatter diagram of freezing point, the content of wax, the content of resin and asphaltene for 92 samples from Tarim basin

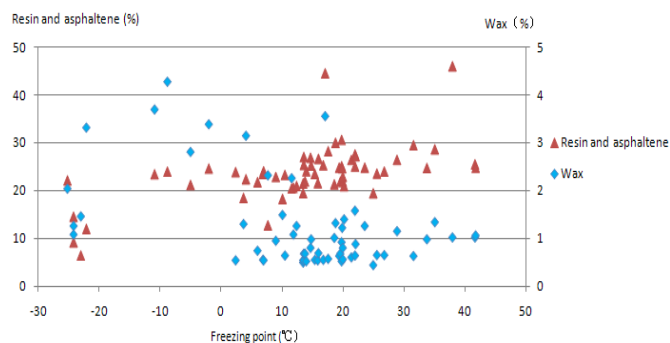


Fig. 2. The scatter diagram of freezing point, the content of wax, the content of resin and asphaltene for 61 samples from Junggar basin

### References

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