

升高,吸附量减少,在未达到满分子层饱和吸附时,吸附量与碘溶液的平衡浓度成正比。要使测得的吸碘值与低温氮吸附法的比表面积相一致,理想状态的吸附条件是吸附质碘溶液浓度($1/2I_2$)为 $0.0473\text{mol} \cdot \text{L}^{-1}$,吸附平衡后,碘溶液浓度应降为某一定值,即测得的吸碘值 $\text{g} \cdot \text{kg}^{-1}$ 相当于 $\text{m}^2 \cdot \text{kg}^{-1}$ 时的碘平衡浓度。称样量的确定就是根据某一种炭黑的吸碘值范围来考虑,使之吸附达到平衡后碘溶液浓度在此值附近。炭黑表面吸附的水分会使测得的吸碘值下降,其干燥难易与比表面积有关,比表面积越大,则越难干燥。

国标吸碘值测定方法只适用于炭黑表面光滑、均匀的单分子层物理吸附。若炭黑表面含有极性官能团及杂质,则测得的吸碘值不

能真实地反映该炭黑的实际比表面积。炭黑中的水分及某些低温挥发组分可加热除去,但其中的官能团则不能除去,因而国标吸碘值测定方法主要用于含极性官能团很少的炉法炭黑的质量控制,而不适用于含大量极性官能团、挥发组分多的炭黑的质量控制。

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Discussion of Determination of Iodine Absorption of Carbon Black

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Abstract The absorption characteristics of the carbon blacks with different structures and their iodine absorption processes were analysed. The determination of the iodine absorption of carbon black specified in GB/T 3780.1-91 was discussed with the emphasis on the requirements of test temperature, standard solution concentration and sample amount. It is considered that GB/T 3780.1-91 is mainly applicable to the determination of iodine absorption of furnace carbon black which contains only few polar functional groups on its surface. The concentration of iodine solution ($1/2I_2$) should be $0.0473\text{mol} \cdot \text{L}^{-1}$ in order that the determined iodine absorption of carbon black is in accordance with the specific surface area of carbon black determined by BET absorption.

Keywords carbon black, iodine absorption, furnace carbon black, absorption characteristics

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除前言外,共分五章。章名依次是:汽车轮胎的性能;轮胎摩擦与磨耗机理;影响胎面磨耗的因素;胎面磨耗的测定;提高新胎和翻新胎的磨耗性能。书后附参考文献 86 篇。

(叶可舒供稿)