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论文

矿井CO气体成因类型及机理辨识分析

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摘要：

针对采煤作业空间CO气体异常，来源及成因类型不清等问题，综合运用矿井火灾学、煤田地质学、瓦斯地质学及煤化学等多学科理论，提出了CO气体成因类型由原生CO气体和次生CO气体构成。原生CO气体是煤化作用阶段的非烃类气体产物之一；次生CO气体是指煤机械破碎激活脱羰分解产生的CO气体，煤常温氧化和煤升温氧化过程产生的CO气体，也包括井下炸药爆破和防爆机车运行释放的CO气体。对原生CO气体和次生CO气体中煤机械破碎脱羰分解产生的CO气体和煤氧复合分解的CO气体的产生机理分别进行了阐述分析。分析了煤升温氧化过程CO气体发生量与煤体温度之间的对应关系及煤升温氧化生成CO气体的活化能。探讨了煤层原生CO气体含量测试及CO来源辨识方面存在的问题，提出了CO气体综合控制与治理的研究方向。

关键词： 原生CO气体；次生CO气体；CO气体成因类型；CO气体产生机理

Analysis on the genetic type and mechanism identification of carbon monoxide in the coalmine

Abstract:

In order to make clear the source and origin of carbon monoxide of the coalmining activity space in the coalmine.And then the viewpoint that the source of carbon monoxide was comprised of the primal and secondary carbon monoxide was firstly put forward by means of the methods of theoretical analysis combining to coalmine fire prevention theory，coal geology theory，gas geology theory and coal chemistry theory.The primal carbon monoxide is one of the non hydrocarbon gas products during coal metamorphism stage.The secondary carbon monoxide is made up of carbon monoxide from mechanically activated decarbonylation of coal and coal oxidation at the normal temperature and heating.It also includes carbon monoxide from the shot firing of explosive and the tail gas of the explosion proof locomotive running in coalmine.The corresponding mechanism of the primal and secondary carbon monoxide which originates from mechanically activated decarbonylation of coal and coal oxidation at the normal temperature and heating was discussed.The relationship between the emission quantity of carbon monoxide and coal temperature at the condition of coal heating oxidation was analyzed.The activation energy of carbon monoxide formation in coal heating oxidation was calculated.Then the problems about the content test and the identification of carbon monoxide in the coalmine were discussed.At last the research direction of comprehensive control and prevention of carbon monoxide emission was present through the above mentioned analyze for personnel security and safety production of the coalmine.

Keywords: primal carbon monoxide；secondary carbon monoxide；genetic type of carbon monoxide；produce mechanism of carbon monoxide

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