汽油中甲缩醛分析专用色谱柱

Gasoline methylal in the analysis of special column

On 15 March 2015 3.15 exposure of the inferior synthetic methylal added to gasoline, caused strong repercussions in the community.

Methylal (Dimethoxymethane), commonly known as formaldehyde and methanol two. Colorless transparent liquid. With alcohol, ether, acetone and other miscible; soluble resin and oil, dissolving capacity than ether, acetone strong; methanol and co boiling mixture can be dissolved with high nitrogen content of nitrocellulose; 16 DEG C when dissolved in water 32.3% (WT); water in methylal dissolved 4.3% (WT). Has a similar smell of chloroform. Methylal is an important derivative of natural gas and coal chemical industry, mainly for the production of anion exchange resin. At the same time, because of its high oxygen content, the molecular structure does not contain the C-C key, can be used as a transportation fuel and fuel additive, and also can be used as a fuel cell mobile hydrogen energy sources. Also as a solvent, its ability to dissolve, but because of its strong vapor anesthesia, should not be used as a general solvent, usually for special occasions, the solvent. In the presence of concentrated sulfuric acid, methanol and formaldehyde were synthesized in a column. The base is relatively stable, and dilute hydrochloric acid together with heating, easy to decompose into formaldehyde and methanol.

Methylal has good oil and volatile, as cleaning agent can replace F11, f13 and fluorinated solvents is replacement of freon to reduce the volatile organic compounds (VOCs) emissions, reduce air pollution, environmentally friendly products. Can be widely used in cosmetics, pharmaceuticals, household goods, automotive industrial supplies, pesticides, leather polishing agent, cleaning agent, rubber industry, paint and ink and other products.

Methylal and gasoline blending, will cause a series of problems, mainly reflected in: (1) methylal itself octane value only 76, added to gasoline, will significantly reduced gasoline octane value, caused gasoline engine knock knock cylinder. II of methylal with low heat value, 4.4% of the only regular gasoline and gasoline join methylal, will cause a decrease in the power, fuel consumption increase. The methylal have swelling and corrosion on plastic parts. Therefore, "GB17930-2013" gasoline vehicle specified in methylal not artificially added gasoline vehicle.

Current car with gasoline in the national standard although the provisions shall not be artificially by adding methylal, but in the technical requirements of the standard did not to be included in the methylal, there is no corresponding gasoline methylal testing national standards or industry standards.

Tengzhou City Xiangying Analysis Technology Co., Ltd. to scientific development as a guide, under the leadership of general manager Wang Xiaoying, according to two chromatographic engineering research and analysis and testing center of scientific research institutions to rely on, through unremitting efforts, the successful development of a gasoline methylal analysis special column XY-Methylal, in the country in the leading level, to fill the gaps in the lack of standards. To provide law enforcement basis and inspection standards for the supervision and inspection of law enforcement agencies will be of great significance.

2015 年 3 月 15 日的 3.15 晚会曝光了劣质调合汽油中添加甲缩醛的情况，引起了社会各界强烈反响。

甲缩醛（Dimethoxymethane），俗称甲醛缩二甲醇。无色透明液体。与醇、醚、丙酮等混溶；能溶解树脂和油类，溶解能力比乙醚、丙酮强；和甲醇的共沸混合物能溶解含氮量高的硝化纤维素；16℃时在水中溶解 32.3%（WT）；水在甲缩醛中溶解 4.3%(WT)。有类似氯仿的气味。甲缩醛是天然气和煤化工的重要衍生品，主要用于生产阴离子交换树脂。同时由于其含氧量高，分子结构中不含有 C-C 键，可用作运输燃料以及燃料添加剂，还可作燃料电池的移动氢能源。也作溶剂，其溶解能力强,但由于其蒸气有较强麻醉性，不宜作一般溶剂使用,通常作特殊场合的溶剂。在浓硫酸催化下，甲醇和甲醛在合成塔中反应制得。对碱比较稳定，与稀盐酸一起加热时，容易分解成甲醛和甲醇。

甲缩醛具有良好的去油能力和挥发性，作为清洁剂可以替代 F11、F13 及含氟溶剂，是替代氟里昂减少挥发性有机物（VOCs）排放、降低大气污染的环保产品。能广泛应用于化妆品、药品、家庭用品、汽车工业用品、杀虫剂、皮革上光剂、清洁剂、橡胶工业、油漆和油墨等产品。

甲缩醛与汽油调合后，会导致一系列的问题，主要表现在：①甲缩醛本身辛烷值只有 76，加入到汽油中，会明显降低汽油的辛烷值，引起汽油发动机敲缸爆震。②甲缩醛热值较低，只有普通汽油的 4.4%，汽油中加入甲缩醛，会引起动力下降，油耗增加。③甲缩醛对塑料件具有溶胀和腐蚀作用。因此，GB17930-2013《车用汽油》中明确规定车用汽油中不得人为加入甲缩醛。

目前车用汽油国家标准中虽然规定不得人为加入甲缩醛，但在标准的技术要求中并没有将甲缩醛列入,目前也没有相应的汽油中甲缩醛检测国家标准或行业标准。

滕州市翔鹰分析技术有限公司以科学发展为指导，在总经理王晓莹的带领下，依色谱工程研究所和分析与测试中心 2 个科研机构为依托，经过不懈努力，成功开发出汽油中甲缩醛分析专用柱 XY-Methylal，在国内处于领先水平，填补标准缺失的空白。为执法机关的监督和检查提供执法依据和检验标准，将具有重要的意义。

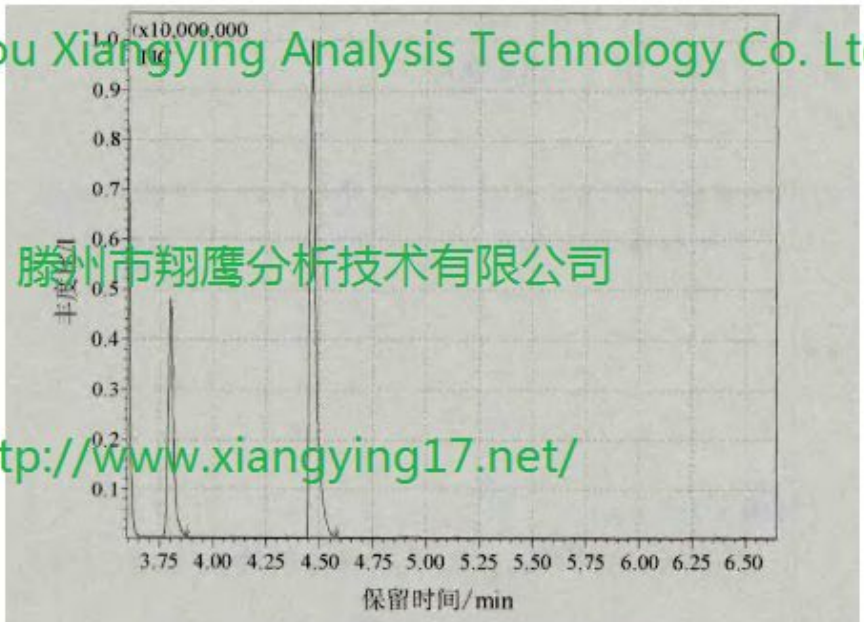

图 1　3.838—甲缩醛　4.473—2-丁酮