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**NATIONAL OCCUPATIONAL HEALTH STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GBZ/T 300.128-2018

Replacing GBZ/T 160.64-2004

**Determination of toxic substances in workplace air -- Part 128:
Methacrylate
(English Translation)**

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Table of Contents

Foreword
1 Scope
2 Normative references
3 Basic information on methacrylates
4 Direct injection of methyl methacrylate - gas chromatography
4.1 Principle
4.2 Instrument
4.3 Reagents
4.4 Sample collection, transportation and storage
4.5 Analysis steps
4.6 Calculation
4.7 Description
5 Solvent desorption-gas chromatography of n-butyl methacrylate
5.1 Principle
5.2 Instruments
5.3 Reagents
5.4 Sample collection, transportation and storage
5.5 Analysis steps
5.6 Calculation
5.7 Description
6 Solution absorption of glycidyl methacrylate - gas chromatography
6.1 Principle
6.2 Instruments
6.3 Reagents
6.4 Sample collection, transportation and storage
6.5 Analysis steps
6.6 Calculation
6.7 Description

Foreword

This part is the 128th part of GBZ/T 300 "Measurement of Toxic Substances in Workplace Air".

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GBZ/T 160.64-2004 "Workplace Air Toxic Substances Determination of Unsaturated Aliphatic Esters" No. 5 the direct injection-gas chromatography of methyl methacrylate has been modified as follows.

- modified the standard name;
- Added solvent desorption-gas chromatography of n-butyl methacrylate;
- Direct injection of methyl methacrylate - gas chromatography using a gas bag sampling, switched to a capillary column;
- Increase the basic information of the object to be tested;
- Improved air sampling and expression of standard series concentrations;
- Added sample blank requirements and method performance indicators.

The main drafting unit and main drafters in this section.

- Direct injection of methyl methacrylate - gas chromatography the main drafting units. Guangdong Provincial Occupational Disease Prevention and Control Institute, Zhejiang Academy of Medical Sciences, Shiyan City, Hubei Province, Occupational Disease Prevention and Treatment Institute.

Main drafters. Chen Liping, Pan Ji, Qian Yaling, Xu Bing, Zhang Geng, Yang Feng.

Solvent desorption-gas chromatography of n-butyl methacrylate Main drafting units. Jiangsu Academy of Safety Production Science, Jiangsu Provincial Center for Disease Control and Prevention.

Main drafters. Zhu Haizhen, Zhu Baoli, Han Xuelian, Cheng Wendong, Wang Xican.

--Solid absorption of glycidyl methacrylate-gas chromatography the main drafting unit. Beijing Municipal Center for Disease Control and Prevention.

Main drafters. Tao Xue, Song Jingping, Liu Yamei.

The previous versions of the standards replaced by this section are.

- GB 8776-88 Appendix A;
- GB 11520-89 Appendix A;
- GBZ/T 160.64-2004 Chapter 5.

Determination of toxic substances in workplace air Part 128. Methacrylates

1 Scope

This part of GBZ/T 300 specifies the direct injection of methyl methacrylate in the air of workplaces - gas chromatography, methacrylic Solvent desorption of acid n-butyl ester - gas chromatography and solution absorption of gas glycidyl methacrylate - gas chromatography.

This section applies to vaporous methyl methacrylate, n-butyl methacrylate and glycidyl methacrylate in workplace air.

Detection of concentration.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest edition (including all amendments) applies to this document.

GBZ 159 Sampling specification for monitoring of hazardous substances in the workplace air
GBZ/T 210.4 Guide to the development of occupational health standards - Part 4.
Methods for the determination of chemical substances in the workplace air

3 Basic information on methacrylates

The basic information of methacrylates is shown in Table 1.

Table 1 Basic information of methacrylates

Chemical material

Chemical Abstracts

(CAS number)

Molecular formula	relative molecular mass	Methyl methacrylate (Methyl methacrylate)
80-62-6	C ₅ H ₈ O ₂	100.12
N-butyl methacrylate (n-Butyl methacrylate)	97-88-1	
CH ₂ C(CH ₃)COO(CH ₂) ₃ CH ₃	142.22	Glycidyl methacrylate (glycidyl methacrylate, Glycidyl methacrylate)
106-91-2	C ₇ H ₁₀ O ₃	142.15

4.1 Principle

The vaporized methyl methacrylate in the air is collected by a gas bag, directly injected, separated by a gas chromatography column, and the hydrogen flame ionization detector Detection, quantified by retention time, peak height or peak area quantified.

4.2 Instrument

4.2.1

Gas bag, the volume is 1L ~ 10L.

4.2.2

Air sampler, flow range from 0mL/min to 500mL/min, or two balls.

4.2.3

Syringe, 1 mL, 100 mL.

4.2.4

Microinjectors.

4.2.5

Gas chromatograph with hydrogen flame ionization detector. Instrument operation reference conditions.

- a) Column. 30m x 0.32mm x 0.5 μ m, FFAP;
- b) column temperature. 100 ° C;
- c) gasification chamber temperature..200 ° C;
- d) detection chamber temperature. 250 ° C;
- e) carrier gas (nitrogen) flow rate. 1mL/min;
- f) Split ratio. 10.1.

4.3 Reagents

4.3.1

Methyl methacrylate, the mass of 1 μ L of liquid at 0.9 ° C is 0.936 mg.

4.3.2

Standard gas. accurately extract a certain amount of methyl methacrylate with a micro-syringe and inject it into a 100mL airtight glass syringe.

Dilute to 100.0 mL with clean air as methyl methacrylate standard gas. Or formulated with a nationally recognized standard gas.

4.4 Sample collection, transportation and storage

4.4.1

On-site sampling shall be performed in accordance with GBZ 159.