

ICS 71.120
CCS G 94



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

GB/T 33488.5-2024

**Test method of pressure equipments of thermoplastics welded
for chemicals-Part 5:Time of flight diffraction**

化工用塑料焊接制承压设备检验方法 第5部分：衍射时差法超声检测

Issued on: April 25, 2024

Implemented on: November 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Preface	III
Introduction	IV
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 General requirements	2
5 Testing equipment	2
6 Testing technology level, process documents and work procedures	8
7 Detection Methods10	14
8 Detection data analysis	14
9 Defect Assessment and Quality Grading	16
10 Test records and reports	18

Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting:

This document is part 5 of GB/T 33488 "Test methods for welded plastic pressure equipment for chemical industry":

The following parts are published:

- Part 1: General;
- Part 2: Appearance inspection;
- Part 3: Radiographic testing;
- Part 4: Ultrasonic testing;
- Part 5: Diffraction time-of-flight ultrasonic testing:

Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents:

This document was proposed by the China Petroleum and Chemical Industry Federation:

This document is under the jurisdiction of the National Technical Committee for

Standardization of Non-metallic Chemical Equipment (SAC/TC162):

This document was drafted by: Ningbo Special Equipment Inspection Institute, Naiflon Group Co., Ltd., Tianjin Special Equipment Supervision and Inspection Technology Co., Ltd:

Technical Research Institute, Chongqing Pengcheng Nondestructive Testing Co., Ltd., Hunan Anguang Inspection and Testing Co., Ltd., Taizhou Special Equipment Inspection and Testing Research Institute Institute, Jiangsu Special Equipment Safety Supervision and Inspection Institute, Pipeline Network Group (Xuzhou) Pipeline Inspection and Testing Co., Ltd., Guizhou Special Equipment Inspection and Testing Institute, Zhejiang Special Equipment Science Research Institute, Anhui Huagong Intelligent Technology Research Institute Co., Ltd., Machinery Industry Shanghai Lanya Petrochemical Equipment Testing Institute Co., Ltd., Jiaxing Special Equipment Inspection and Testing Institute, Fujian Boiler and Pressure Vessel Inspection Institute, Ningxia Special Equipment Inspection Institute Inspection and Testing Institute, Sichuan Special Equipment Inspection and Research Institute, Shenzhen Youtong Plastic Welding Machinery Co., Ltd., Guangdong Special Equipment Inspection and Research Institute Shan Testing Institute, Zhejiang South China Environmental Protection Equipment Co., Ltd., Guangdong Junxiang Technology Co., Ltd., Linhai Weixing New Building Materials Co., Ltd., Chongqing Municipal Special Equipment Testing and Research Institute, Shanghai Special Equipment Supervision and Inspection Technology Research Institute, Tianhua Chemical Machinery and Automation Research and Design Institute Co., Ltd: company:

The main drafters of this document are: Wang Du, Huang Huandong, Si Yonghong, Xie Linfeng, Ren Zhifeng, Jin Zhongping, Wu Jun, Hou Chunwu, Nie Yin, Chen Dingyue, Jia Banglong, Xu Bo, Wang Shenghui, Wang Fenghuai, Qian Shengjie, Dong Yang, Shen Zhengxiang, Tian Li, Zhu Chaoming, Wang Fang, Wang Wenda, Chen Wenjie, Wang Mengjun, Yang Ling, Yu Zhenxing, Chen Bo, Yu Jinjie, Mei Lin, Xu Zhijun, Cai Zheng, Chen Shiwang, Yuan Kun, Yang Shengxuan, Duan Hongbin, He Zhengwen, Xiao Lijuan, Sang Linchun:

Introduction

GB/T 33488:5 aims to provide a reliable non-destructive testing method for welds of plastic welded pressure equipment for chemical industry to evaluate the quality of equipment welds:

The quality grade ensures the safety of equipment use and consists of 5 parts:

- Part 1: General: The purpose is to put forward general requirements for non-destructive testing of welds of plastic welded pressure equipment for chemical industry:
- Part 2: Appearance inspection: The purpose is to provide a reliable weld appearance inspection method for plastic welded pressure equipment for chemical industry:

- Part 3: Radiographic testing: The purpose is to provide a reliable radiographic testing method for welds of plastic welded pressure equipment for chemical industry:
- Part 4: Ultrasonic testing: The purpose is to provide a reliable ultrasonic testing method for welds of plastic welded pressure equipment for chemical industry:
- Part 5: Diffraction time-of-flight ultrasonic testing: The purpose is to provide reliable diffraction time-of-flight ultrasonic testing of welds of plastic welding pressure equipment for chemical industry:

Differential ultrasonic testing method:

Inspection methods for plastic welded pressure equipment for chemical industry Part 5:
Ultrasonic testing by time-of-flight diffraction

1 Scope

This document specifies the time-of-flight diffraction ultrasonic testing method (hereinafter referred to as "TOFD testing") for plastic welded pressure-bearing equipment used in the chemical industry:

General requirements, testing equipment, testing technology level, process documents and work procedures, testing methods, test data analysis, defect assessment and quality Grading and testing records and reports:

This document applies to thermoplastic plastic sheets, pipes and fittings such as polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), etc:

Raw materials, welded by hot melt welding process, TOFD detection of plastic welded pressure equipment butt joints with wall thickness of 10mm~70mm:

This document is applicable to the inclusions, holes, cracks, fusion surface defects, cold welding defects in the hot melt welding process of thermoplastics Detection:

This document is not applicable to the detection of defects such as over-welding, short fusion surface and misalignment in welded joints of thermoplastics using the hot-melt welding process:

2 Normative references

GB/T 27664

GB/T 27664

GB/T 33488

3 Terms and definitions

The terms and definitions defined in NB/T 47013:10-2015 and the following apply to this document: 3:1 Inclusion Foreign matter remaining in a hot melt welded joint after welding:

Note: Such as mud, weeds, metal shavings, etc: 3:2 hole Internal holes in the weld joint formed due to shrinkage holes, pores, etc: during hot melt welding: 3:3 crack Cracks in hot melt welded joints caused by material shrinkage or stress during hot melt welding:

chinastandards.org · PREVIEW