

Patents

Country	Patent Title	Patent No.
Korea	Material Yield Strength Directionality Evaluation System Using Indentation Testing and Surface Displacement Analysis	10-2521067
	Portable Calibration Tester with Shielded Measuring Device	10-1727504
	Fracture Toughness Measurement Method Using Continuous Indentation Testing	10-1707492
	Portable Testing Device Fixture (Utility Model)	20-048209
	Surface Adhesion Strength Evaluation Method	10-1685507
	Indentation Tester	10-1670760
	Portable Testing Device	10-1670762
	Portable Testing Device Fixture	10-1628705
	Portable Surface Inspection and Electro-polishing Device	10-1531953
	Residual Stress Evaluation Method and Principal Stress Evaluation Method Using Instrumented Indentation Testing	10-1471938
	Residual Stress Evaluation Method Using Instrumented Indentation Testing	10-1373059
	Yield Strength Calculation Method and Tensile Strength Calculation Method Using Instrumented Spherical Indentation Testing Variables	10-1407405
	Evaluation Method for Non-Isotropic Residual Stress Using Instrumented Indentation Testing	10-1152323
	Yield Strength Determination Method Using Continuous Indentation Testing	10-0384732
	Tensile Strength Determination Method Using Continuous Indentation Testing	10-0364112
	Specimen Support for Tensile Testing Using Small Specimens	10-0408703
	Adhesion Strength Evaluation Specimen and Evaluation Method for Adhesion Strength	10-0404659
	Method for Determining Virtual Work-Hardening Index, Stress Coefficient, Yield Strength, and Tensile Strength of Materials with Linear Work-Hardening Phenomena Using Continuous Indentation Testing	10-0643193
	Residual Stress Measurement Method Using Continuous Indentation Testing	10-0965226
	Instrumented Indentation Tester with Built-in Microcontroller and Residual Stress Measurement Method Using Same	10-1117661
	Indentation Impact Tester	10-1981275
	Stress Ratio and Residual Stress Evaluation System Using Indentation Surface Displacement Analysis	10-2257004
	Instrumented Indentation Tester	10-2031197
	Method for Calculating Yield Strength and Tensile Strength of Work-Hardened Materials Using Instrumented Spherical Indentation Testing Variables	10-1407405
	Indentation Testing Method Considering Load Cell Deformation	10-2031195

Country	Patent Title	Patent No.
Japan	Evaluation of Non-Isotropic Residual Stress Using Instrumented Indentation Testing	5017600
	Fracture Toughness Measurement Method Using Continuous Indentation Testing	4784774
China	Portable Surface Inspection and Electro-polishing	OP15003CN
	Fracture Toughness Measurement Method Using Continuous Indentation Testing	1815229
Russia	Residual Stress Evaluation Method Using Instrumented Indentation Testing and Computer Program Recorded on a Medium, and an Indentation Tester Performing Instrumented Indentation Testing Upon Execution of the Program	2611078
USA	Residual Stress Measurement Method Using Continuous Indentation Testing	7,472,603
	Fracture Toughness Measurement Method Using Continuous Indentation Testing	7,487,051
	Indentation Testing Method Considering Load Cell Deformation	11,921,089
	Evaluation Method for Non-Isotropic Residual Stress Using Instrumented Indentation Testing	8,214,162
	Fracture Toughness Measurement Method Using Continuous Indentation Testing	9,702,798
Europe	Fracture Toughness Measurement Method Using Continuous Indentation Testing	1815229
	Residual Stress Measurement Method Using Continuous Indentation Testing	1836473
	Evaluation Method for Non-Isotropic Residual Stress Using Instrumented Indentation Testing	2118635
	Residual Stress Evaluation Method Using Instrumented Indentation Testing and Computer Program Recorded on a Medium, and an Indentation Tester Performing Instrumented Indentation Testing Upon Execution of the Program	2952866

Trademarks

Country	Trademark	Registration No.
Korea	FRONTICS 프론틱스	0512681
	AIS	0512682
	Symbol (Design)+Frontics	40-1118130
	Symbol (Design) Logo	40-1118131
USA	AIS	4655549
	Frontics	4864402
	Symbol	4878514
Russia	Symbol	568552
	AIS	571730
	Frontics	571264
China	AIS	15692248
	Frontics	15692249
	Symbol	15716219

Standards/Code

☐ Domestic and International Standards

Standards/Code	Contents
ASTM American Society for Testing and Materials	<ul style="list-style-type: none"> • ASTM E2546-15 "Standard practice for instrumented indentation testing"
ISO International Organization for Standardization	<ul style="list-style-type: none"> • ISO TR 29381 (2008) "Measurement of mechanical properties by instrumented indentation test: Indentation tensile properties" • ISO TS 19096 (2023) "Metallic materials-Instrumented indentation test for hardness and materials parameters-Evaluation of stress change using indentation force differences"
ASME American Society of Mechanical Engineers	<ul style="list-style-type: none"> • ASME Code Case 2703 (2011) "Instrumented indentation testing as alternative hardness test for QW-290 temper bead welding" • ASME Code Case N-881 (2017) "Exempting SA-508 Grade 1A from PWHT based in measurement of residual stress in Class 1 applications"
AWS American Welding Society	<ul style="list-style-type: none"> • AWS Welding Handbook (2018) "Chapter 7-Residual stress and distortion: Measurement by indentation"
GB National Standards of China	<ul style="list-style-type: none"> • GB/T 39635-2020 "Metallic materials-Measurement of indentation tensile properties and residual stress by an instrumented indentation test"
KS Korean Industrial Standards	<ul style="list-style-type: none"> • KS B 0950: 2009 "Metallic materials-Instrumented indentation test for indentation tensile properties" • KS B 0951: 2023 "Instrumented indentation tests on welds in steel-Measurement of residual stress on welded joints"

☐ Test Procedure Standards

- Korean Society for Nondestructive Testing, "Instrumented Indentation Testing Procedure for Measuring Stress in Materials and Structures," (January 15, 2024)
- Korean Electric Power Industry Standard (KEPIC) MDF A370 Appendix X1. Instrumented Indentation Testing for Metallic Materials (2006)