



METALLURGICAL MATERIAL TESTING

YOUR COMPETENT BUSINESS PARTNER FOR INSPECTION, CERTIFICATION, VERIFICATION AND TESTING

WHEN YOU NEED TO BE SURE

SGS

Metallurgical material testing is used for application trials and improvement of materials, for defect detection and evaluation in the metal industry, for failure analysis and characteristics of the materials.

SGS Metallurgical Materials Laboratories focus on the testing of metal products.

Our laboratories offer a range of mechanical, physical and chemical testing methods. Our services cover the mechanical properties, thermal properties, chemical composition analysis, and microstructure analysis and salt spray corrosion testing.

Generally, the tests are performed in order to verify material characteristics, such as tensile strength, compressive strength, bending strength, aging characters or chemical composition.

Located in Melrose Park, IL, SGS MSi Group are the US leader and innovator in metallurgical testing services.

The company SGS, was founded in 1878, and is recognized as the global benchmark in quality and integrity. Industrial Services as one of the largest business lines within the SGS Group is a global provider of technical inspection, verification, testing and conformity assessment services for all industrial markets.

The core values of complete independence, transparency and integrity guide us in our mission to deliver first-class services on a constant high quality level to customers around the world.

Partnering with SGS, guarantees access to unparalleled know-how and facilities. We eliminate uncertainty, enhance mutual confidence, and offer you the



freedom to concentrate on the things that really matter: The growth of your core operations and the profitability of your enterprise.

SGS carries out independent and impartial examination, verification, validation and assessment on behalf of clients in order to ensure that systems and products are designed and constructed according to the specification requirements of the client.

With our advanced testing technologies and our experienced and qualified staff we offer total quality services and high level expertise for commercial

clients, governments and international institutions.

Our Metallurgical Material Testing Laboratories are accredited according to ISO 17025/A2LA certifications.

SGS MSi metallurgical laboratory can perform:

- Mechanical testing
- Chemical composition analysis
- Metallurgical microstructure examinations
- Failure analysis and corrosion analysis of metal material

METAL TESTING SERVICES

Metal testing services focus on the testing of ferrous metal, non-ferrous metal, mechanical apparatuses and mechanical parts. Our services cover mechanical properties, chemical composition analysis, micro-structure analysis, dimensional measurements, non-destructive testing, corrosion resistance and weather resistance.

MAIN TESTING SCOPE

Mechanical Property Testing

- Tensile
- Rockwell hardness
- Brinell hardness
- Vickers micro-hardness
- Bend test
- Charpy impact
- Jominy testing
- Heat treatment for testing process



Chemical Composition Analysis

- Optical emission spectrometric (OES solid sample)
- Inductively couple plasma (ICP wet chemistry)
- LECO combustion (carbon, sulfur, nitrogen, hydrogen and oxygen)

Metallographic Examination

- Macro-/microstructure inspection
- Grain size
- Decarburization
- Macroetch
- Coating
- Micro inclusion rating ASTM E45
- Free ferrite exam
- Sulfur prints (up to 8.5" x 11")
- Coating thickness
- Case depth
- AMS 2300, 2301, 2303, 2304 steel cleanliness rating by magnetic particle inspection
- Scanning electron microscopy (SEM), energy dispersive spectrometry (EDS)

Weld Testing

- Welder performance qualification testing
- Procedure qualification record testing
- Welding procedure specification

Engineering Services

- Product claims
- Problem solving and consulting
- Third party testing
- Reverse engineering
- Specification review

Corrosion Testing

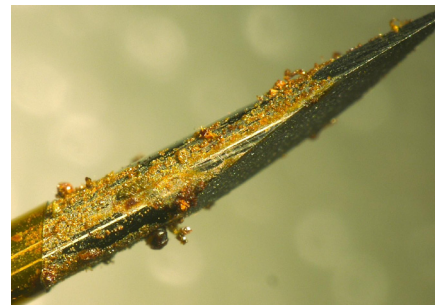
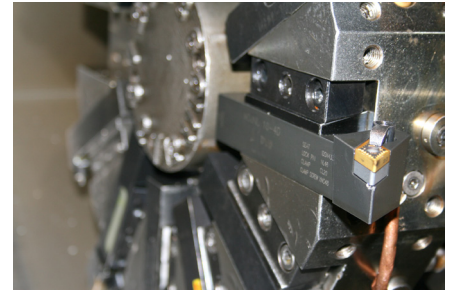
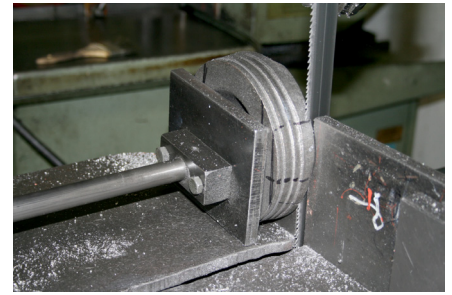
- ASTM B117 salt spray testing
- ASTM A262 (practice A and E) intergranular attack in austenitic stainless steels
- ASTM A923 (practice A and C) detrimental intermetallic phase in wrought duplex austenitic/ferritic stainless steels.
- ASTM G28 intergranular corrosion in wrought, nickel-rich, chromium-bearing alloys.
- ASTM G48 pitting and crevice corrosion resistance of stainless steels

Failure Analysis

- Fatigue/fracture failure investigations
- Corrosion failure investigations

Machining Capabilities

- Band saws (Up to 25" in diameter)
- Conventional and Blanchard type grinders
- Four axis milling centers
- Three axis CNC lathes
- Manual lathe
- Furnaces (up to 1900°F)
- Jominy water quench system



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SGS IS THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY

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