

A photograph of a laboratory or industrial research setting. A person with long red hair, wearing a dark blue shirt, is blurred while walking across the frame, holding a white tray. In the background, there is a laboratory bench with a computer monitor displaying a blue screen, a sink, and various pieces of equipment. The scene is lit with overhead fluorescent lights.

**RESEARCH AND
DEVELOPMENT
SERVICES**

The company BSL Industrie a.s. is active in the field of plastic coating of machine parts and components for the industry, as well as in the development and production of plastic protective coatings and layers, plastic covers and plastic coating of metal parts according to customer requirements, using the following technologies: a dip coating technology (PVC plastisols), fluidized bed (PE, PA), electrostatic and flame spraying of the powder thermoplastic.

Our company is equipped with advanced technology which is certified, and is running its production in modern premises. The company has implemented the quality management system which follows the European and international standards.



Simulation of the external environment on the product

1. TEMPERATURE AND CLIMATE TESTS

Laboratory climate chambers allow testing the effect of temperature and humidity on the product:

- In the temperature range from -40 to +180 °C
- In a climatic range of 10 to 95 % r.h., at a temperature of +10 °C to +95 °C
- With a temperature gradient of 4.0 K/min for heating; 4.5 K/min for cooling
- Constant and cyclic test waveforms
- Possibility of independent monitoring of temperature and humidity directly on the sample, with the real test progress recorded directly on the graph

Fulfilling the standards

Our climate chamber can be used for laboratory and industrial applications, meeting the requirements of standards such as DIN, ISO, MIL, ASTM, etc.

Example of tests performed according to the following ISO standards:

- EN 60068-2-30 ED.2
Environmental testing-Part 2-30: Tests-Test Db: Damp heat cycling (12 h + 12 h cycle)
- EN 60068-2-14 ED.2
Environmental testing-Part 2-14: Tests-Test N: Temperature change
- EN 60068-2-1 ED.2
Environmental testing-Part 2-1: Tests-Test A: Cold
- EN 60068-2-52 ED.3
Environmental testing-Part 2: Tests-Test Kb: Cyclic salt spray test (sodium chloride solution)
- EN 60068-2-78 ED.4
Environmental testing-Part 2-78: Tests-Test Cab: Moist Heat Constant



— Laboratory climate chamber



2. CORROSION TESTS

Salt corrosion chambers offer salt spray testing, when is the main comparative corrosion test, measuring the actual product properties against those predicted, usually set by international standards.

Technical data

- For salt spray tests, temperature range up to +50 °C
- Salt spray rate - adjustable from 0.5 to 2.5 ml/80 cm² /hour

The salt chamber model meets the requirements for continuous salt spray testing at one given, user-adjustable temperature in accordance with ASTM B117, EN ISO 9227 and similar international standards. It can be used with pH neutral salt solutions (NSS) and solutions with added acetic acid (ASS) or cupric acid (CASS).

Most often tested in salt spray tests according to standards

- ASTM B 117
- ISO 7253
Coatings - Determination of resistance in neutral salt spray
- ISO 9227 (NSS, ASS, CASS)
Corrosion tests in artificial atmospheres - Salt spray tests

— Salt corrosion chamber

3. ARTIFICIAL AGING WITH XENON LAMP

It is a device that generates up to twice the irradiance level of the sun, using the radiant energy provided by a high-tech, air-cooled, xenon lamp. Irradiance is the rate at which light energy strikes the samples.

The Xenon chamber offers

- Constant measurement and control of radiation exposure during each test
- Uniformity of irradiation thanks to parabolic reflector chamber with xenon lamp in the focal point

Example of tests performed according to the following ISO standards

- EN ISO 4892-2
Plastics-Methods of exposure to laboratory light sources-Part 2: Xenon lamps

— Xenon chamber





Material tests

1. STRENGTH TESTS OF MATERIALS

We test the mechanical properties of materials such as tension, compression and bending

- In the force range from 4 N up to 50 kN
- Measurement of material strength properties
- Three types of jaws for clamping different types of samples
- Possibility of pre-tempering samples in a temperature or climate chamber
- Real test recording

Example of tests performed according to the following ISO standards

- EN ISO 6892-1
Metallic materials-Tensile testing-Part 1: Room temperature test method
- EN ISO 8256
Plastics-Determination of impact tensile strength
- EN 12317-2
Waterproofing tapes and membranes - Determination of shear resistance at joints - Part 2: Plastic and rubber tapes and membranes for roof waterproofing
- EN ISO 527-3
Plastics-Determination of tensile properties-Part 3: Test conditions for films and sheets
- EN 12316-2
Waterproofing tapes and membranes - Determination of resistance to spalling at joints - Part 2: Plastic and rubber tapes and membranes for roof waterproofing

— Static testing machine

2. HARDNESS OF MATERIALS

The hardness of polymers, as one of the mechanical properties, is not commonly stated in practice, but some polymer manufacturers include hardness values in their data sheets. For softer plastics and rubbers, hardness is given by the Shore method.

We test the mechanical properties of materials such as

- Hardness of rubbers and plastics according to methods Shore A and Micro Shore
- ISO 48-4, ASTM D 2240 and EN ISO 868 require thicknesses less than ≥ 6 mm, so Micro Shore methods must be used
 - The Micro Shore A method allows measurement of samples in the hardness range of 30-95 [ShA] from a sample thickness of 0.7 mm.
 - The depth of penetration of the body is 1 mm and 0.5 mm for the individual Micro Shore methods, while for the standard Shore A and Shore A methods the depth of penetration of the body into the sample is up to 2.5 mm.
 - The Micro Shore A method is suitable for measuring the hardness of homogeneous materials where the surface hardness of the sample does not differ significantly from the hardness of the core.



— Hardness tester

To verify the results of all tests, we use the INSPEX 3 digital microscope, a powerful, flexible and intuitive high-resolution digital microscope based on a new module with a 30x FULL HD camera. It can automatically take multiple images at different focal depths and produces a final 2D image. Inspex 3 is ideal for industries such as medical devices, pharmaceuticals, precision engineering and electronics.



— Optical microscope



Sales department
tel. +420 777 737 304

BSL Industrie a.s.
U Dvora 1098
687 51 Nivnice

tel. +420 572 633 172
bsl@bslindustrie.cz

www.bslindustrie.cz

