

Laboratory of Adhesive Bonding Technology

Principal goals and activities

- Research and development of properties in new types of adhesives and sealants.
- Applied research of bonding for industrial practice, especially for the automotive sector.

Offer of technology and expertise

- Research in the field of assessment bonded joints quality in terms of the adhesive, substrate, lubricant and technical conditions of making the joint.
- Strength test in shearing load (PV 12.35, PV 12.05, PV 12.07).
- Adhesives – T-peel test for flexible-to-flexible bonded assemblies (ISO 11339, PV 12.31).
- Adhesives – Determination of dynamic resistance to cleavage of high-strength adhesive bonds under impact conditions – Dynamic impact wedge method (ISO 11343).
- Adhesives – Determination of tensile lap-shear strength of bonded assemblies (ČSN EN 1465).
- Corrosion tests of bonded connections (VDA 621-415, VW P 12.00, VW P12.10, VDA-KKT, SCAB-Test, Fog test, Atmospheric test).
- Tests of adhesive rib formation.
- Tests of adhesive expansion index.
- Tests of lubricant creep.

** in cooperation with the Department of Nanomaterials, Advanced Technology and Innovation at TUL*

General focus of laboratory

- Analysis of adhesive joints quality in terms of technological conditions of adhesive application in industrial practice, i.e. time delay during the making of the bond, application of adhesive, temperature profile and adhesive curing, application of lubricants, surface morphology on the substrate, type of surface film on the substrate, micro geometric properties of the substrate, corrosion load, etc.
- Monitoring of adhesives properties, sealants and substrates in terms of loading applies to the bond (influence of bond structure, temperature, moisture, corrosive effect, manner of load application, etc.).

Specific instruments and outcomes

- TIRA test 2300 tensile tester up to 100 kN with a thermal chamber (from -80 to +230 °C).
- Charpy hammer (from 10 to 300 J).
- Instron Ceast 9350 drop tower impact system (impact velocity up to 25mps, max. force sensor (90 kN*).
- Induction heating instrument (from 10 to 20 kHz).
- Venticell 222 laboratory oven (RT up to 240 °C).
- Liebig SKBW-1000 A-TR corrosion testing unit (used medium: salt spray).
- Air-conditioning unit (RT up to 90 °C, from 20 to 100 %).
- STABIL SLK PROFI degreasing unit.
- MarSurf PS1 surface roughness meter.

