

# BILSTEIN ZE-Grades



BILSTEIN ZE-Grades: an innovative product family in the field of high and ultra high strength cold rolled steel strip offered by BILSTEIN GmbH & Co. KG.

## The BILSTEIN ZE-Grades combine sophisticated, high and ultra high yield strength grades with the specific advantages of cold rolled steel strip

Based on the standards for hot and cold rolled HSLA steels according to DIN EN 10149-2 and DIN EN 10268, BILSTEIN GmbH & Co. KG developed the BILSTEIN ZE-Grades, which exceed these standards by far with minimum yield strength values of up to 1,200 MPa, suitable for cold forming applications. Furthermore BILSTEIN offers a group of the BILSTEIN ZE-Grades especially designed for wear and tear applications.

The aim of our efforts was to provide engineers in development departments, mainly in the automotive industry, with a family of steel grades with ultra high minimum yield strength levels for cold forming applications. The feature that sets the BILSTEIN ZE-Grades apart from others is the continuously variable, minimum yield strength from 500 up to 1,200 MPa. Wherever there is a demand for passenger safety and/or environment protection combined with weight and cost savings, the BILSTEIN ZE-Grades, adapted to customers' applications, are the first choice. However, due to cost savings resulting from thickness reduction, the BILSTEIN ZE-Grades become more and more popular in the non-automotive sector, as well.

The specific advantages of cold rolled steel strip apply in both sectors and allow a high level of automation within your production.

- **Superior processing properties:**
  - Tight thickness and width tolerances for the entire range of dimensions and strength levels
  - Consistency in mechanical properties over the entire coil length, from batch to batch and from heat to heat
  - Strictly specified production route and chemistry for each single product
  - Lowest content of trace elements and high degree of cleanliness
  - Application specific surface conditioning
  - Oiled with anti-corrosive and/or drawing lubricants
- **Handling and storage advantages:**
  - Flexible coil weights without weldings
  - Customised coil weight and packaging
  - Small order volumes
- **Flexibility:**
  - Use of commonly available raw materials
  - Short processing and re-procurement times
- **Weight and cost savings:**
  - Reduction of strip thickness by using ultra high strength steels up to 1,200 MPa minimum yield strength
  - Tight thickness tolerances allow reduction of nominal thickness

### Application examples

The BILSTEIN ZE-Grades are highly suitable for the use in stamping, bending and roll forming processes as well as for wear and tear applications. When used for drawn components the design regulations for the use of high and ultra high strength steels have to be observed. Typical applications are:

#### Automotive

- Seating
- Occupant safety systems
- Steering systems
- Air bag systems
- Transmissions
- Door and locking systems
- ...

#### Non-automotive

- Drawer slides
- Furniture hinges
- Window profiles
- Hose clamps
- ...

### Future developments

With the new ultra high strength BILSTEIN ZE-Grades for cold forming purposes the minimum yield strength values were shifted to values above 1,200 MPa. In addition to that, the thickness range, especially for those ultra high strength grades, was extended to values of down to 0.4 mm.

The minimum thickness for the high strength BILSTEIN ZE-Grades with minimum yield strength values between 500 and 800 MPa today is 1.4 mm. However, first applications of those grades have already been supplied with thicknesses between 0.4 and 0.6 mm. One of our main objectives is to extend the thickness range of these high strength BILSTEIN ZE-Grades below 1.4 mm.

The ranges of mechanicals have an important influence when running the BILSTEIN ZE-Grades at our customer's plants. Therefore and parallel to the thickness reduction we are working continuously on a further reduction of those ranges which are already much closer than the typical ranges for high and ultra high strength steel grades.

### Services

Steel with Appeal. The BILSTEIN ZE-Grades cover a wide range of minimum yield strength values from 260 to 1,200 MPa and thus offer an almost unlimited field of applications. Experienced technical consultants from BILSTEIN are looking forward to assist your development engineers to design the right ultra high strength grade for your individual application. This design process is supported by our state-of-the-art laboratory and our long term relationships to leading technical universities and research institutes.