

# COLD WORK TOOL STEELS

## Application Segments

Cold Work

## Available Product Variants

Long Products\*

Plates

\* Presented data refer exclusively to long products. Please observe the detailed explanations at the end of the data sheet (pdf).

## Product Description

BÖHLER K313 corresponds to the material 1.2362 (X63CrMoV5 1). BÖHLER K313 is used for intermediate rolls in multi-roll stands, deburring dies and punches, cutting plates and punches, hot shears, ejection pins, drop-forging dies and hole punches.

## Process Melting

Airmelted

## Properties

- > Toughness & Ductility : good
- > Wear Resistance : good
- > Compressive strength : high
- > Dimensional stability : good

## Applications

- > Machine knife (for producers)
- > Fine Blanking, Stamping, Blanking
- > Packaging industry
- > Rolling
- > Rolls
- > Cold Forming
- > Roll Forming

## Technical data

| Material designation |     |
|----------------------|-----|
| 1.2362               | SEL |
| X63CrMoV5-1          | EN  |

## Chemical composition (wt. %)

| C    | Si   | Mn   | Cr   | Mo   | Ni   |
|------|------|------|------|------|------|
| 0.63 | 1.10 | 0.40 | 5.30 | 1.20 | 0.30 |

## Material characteristics

|             | Compressive strength | Dimensional stability during heat treatment | Toughness | Wear resistance abrasive | Wear resistance adhesive |
|-------------|----------------------|---------------------------------------------|-----------|--------------------------|--------------------------|
| BÖHLER K313 | ★★★★                 | ★★★                                         | ★★★       | ★★★                      |                          |
| BÖHLER K305 | ★★★★★                | ★★★                                         | ★★        | ★★★★★                    |                          |
| BÖHLER K306 | ★★★★★                | ★★★                                         | ★★★★★     | ★★★                      |                          |
| BÖHLER K320 | ★★★                  | ★★★                                         | ★★★       | ★★★                      |                          |
| BÖHLER K329 | ★★★                  | ★★★                                         | ★★★★★     | ★★★★★                    |                          |
| BÖHLER K600 | ★                    | ★★★                                         | ★★★★★     | ★                        |                          |
| BÖHLER K601 | ★                    | ★★★                                         | ★★★★★     | ★★                       |                          |
| BÖHLER K605 | ★★                   | ★★★                                         | ★★★★★     | ★                        |                          |

## Delivery condition

|               |          |
|---------------|----------|
| Annealed      |          |
| Hardness (HB) | max. 240 |

## Heat treatment

|                         |                 |                                                                                                                                                                                 |
|-------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annealing               |                 |                                                                                                                                                                                 |
| Temperature             | 800 to 850 °C   | Slow controlled cooling in furnace at a rate of 10 to 20 °C/hr (18 to 36 °F/hr) down to approximately 600 °C (1112 °F)    Further cooling in air.                               |
| Stress relieving        |                 |                                                                                                                                                                                 |
| Temperature             | 650 °C          | After through heating, hold in neutral atmosphere for 1-2 hours.    Slow cooling in furnace    Intended to relieve stresses caused by extensive machining or in complex shapes. |
| Hardening and Tempering |                 |                                                                                                                                                                                 |
| Temperature             | 980 to 1,020 °C | Quenching: Oil, salt bath (450 to 500 °C   842 to 932 °F), air (small sizes only)    Holding time after temperature equalization: 15 to 30 minutes.                             |

If other available product variants are listed in addition to long products, please note that these may differ in terms of melting process, technical data, delivery and surface condition as well as available product dimensions. For mandatory technical specifications, other requirements and dimensions, please contact our regional voestalpine BÖHLER sales companies. The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.

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ONE STEP AHEAD.