# HCT780C+Z

Multi-phase steel for cold forming

– complex-phase steel

| Material no.1.0954 |
|---|
| according to DIN EN 10346 |
| DIN EN 10143 |

## General information

Complex-phase steel (CP-steel) consists of a matrix based on ferrite and bainite, which may contain minor amounts of martensite, pearlite and retained austenite. In contrast to dual-phase steel, CP-steel has a higher yield to tensile strength ratio, reduced work hardening and a higher hole expansion.

In accordance with the basic oxygen steelmaking process, the steel is being melt in the converter, and subsequently undergoes an alloy treatment in the secondary metallurgy. The outcome is aluminum-killed steel, possessing high tensile strength owing to the addition of e.g. manganese, chromium or silicon. The adjustment of the steel's mechanical properties is ensured by precise temperature control preceding the immersion in a zinc bath.

## Chemical composition[3)]

(melt analysis in percent weight)

| min. in % | max. in % |
|---|---|
| C | 0.17 |
| Si | 0.30 |
| Mn | 2.00 |
| P | 0.050 |
| S | 0.010 |
| Altotal 0.015 | 0.080 |
| Cr + Mo | 1.00 |
| Nb + Ti | 0.050 |

1) The maximum value for V ≤ 0.20%, and B ≤ 0.005%.

## Mechanical properties (longitudinal)

| Yield strength $R_{p0,2}$ in MPa |
|---|
| 570 – 720 |

| Tensile strength $R_m$ in MPa |
|---|
| ≥ 780 |

| Total elongation[2)] $A_{80}$ in % |
|---|
| ≥ 10 |

| Bake-Hardening[3)] $BH_2$ in MPa |
|---|
| ≥ 30 |

2) For a thickness of 0.70 mm, $A_{80}$ reduces to 8%.

3) Valid up to tree months after supply.

## Available dimension

| Thickness in mm | Width in mm |
|---|---|
| 0.70 – 0.84 | 900 – 1,485 |
| 0.85 – 1.20 | 900 – 1,535 |
| 1.21 – 1.92 | 900 – 1,715 |
| 1.93 – 2.00 | 900 – 1,735 |

## Form of delivery

This multi-phase steel product with high tensile strength is delivered as hot dip galvanized sheet (cold rolled steel sheet substrate) within a thickness range of ≥ 0.70 mm ≤ 2.50 mm. It contains surface finish MB with PRETEX® texturing in accordance with DIN EN 10346 in combination with relevant valid dimensioning standards (DIN EN 10143), or special terms of delivery. The test unit is 20 t, or commencing 20 t of products of the same steel grade and nominal thickness. The test unit for strip steel is the coil. The steel width is determined by the nominal thickness, and can reach a maximum of 1,735 mm. On request we can supply sample material in ZM.

## Application examples

CP-steel grades are predestined for the needs of car manufacturing, especially for safety-relevant components.

The special quality of CP-steel grades can be seen in the well-balanced combination of forming capabilities and cracking resistance of the edges, which ensure its suitability for components with a complex shape (e.g. with protruding parts or rim holes).

As a consequence of the high yield strength, even slightly deformed components possess a high strength compared to dual-phase steel of the same strength class.

The CP-steel products can be processed by any common technique in the fields of pressing, jointing and painting. Moreover, the products described in this document can be welded manually or automatically by any known welding technique.

## HCT780Cxpand®[4)]

This steel grade can also be delivered as **xpand®** version with a guaranteed hole expansion value of min. 40% (cf. HHE, High Hole Expansion).

| High hole expansion according to ISO 16630 |
|---|
| ≥ 40 % |

4) on request



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