



## MATERIAL

Swebor Armor™ 440 is a low alloyed ballistic protection steel. Chemical composition paired with its carefully controlled heating, rolling, cooling and heat treatment sequences give Swebor Armor™ 440 its good combination of hardness,  $R_{p_{0,2}}/R_m$  ratio, elongation, weldability, bending, blast and ballistic protection ability. Steel is equivalent to MIL - DTL - 12560 class 4 selection with tighter chemical composition range for better material performance.

## APPLICATION

Swebor Armor™ 440 can be used in most protection applications i.e. civil armored vehicles (limousines, SUVs or trucks) and military applications. Swebor Armor™ 440 has good resistance against penetration and blast but still remains easy to handle in the workshop.

## CHEMICAL COMPOSITION (in wt.%)

| MAX | C    | Si   | Mn   | Cr   | Ni   | P     | S     | B     | Mo   | CE(IIW) / CET** |
|-----|------|------|------|------|------|-------|-------|-------|------|-----------------|
|     | 0,25 | 0,60 | 1,40 | 1,20 | 0,50 | 0,025 | 0,005 | 0,002 | 0,35 | 0,46 / 0,30     |

\*The steel is grain-refined / All values are in max. wt. %

\*\*Typical for 12 mm thick plate

## DELIVERY CONDITION

Quenched + Tempered. Plates can be delivered in raw or sandblasted surface condition.

## HARDNESS

The hardness is measured according to DIN EN ISO 6506-1. The measurement takes place 1 mm underneath the plate surface. Swebor Armor™ 440 reaches hardness values between 420 and 470 HB.

## MECHANICAL PROPERTIES (TYPICAL VALUES)

| YEILD STRENGTH $R_{p_{0,2}}$ (N/mm <sup>2</sup> ) | TENSILE STRENGTH $R_m$ (N/mm <sup>2</sup> ) | ELONGATION $A_5$ (%)       | ELONGATION $A_{50}$ (%) |
|---|---|----------------------------|-------------------------|
| 1150  | 1450  | 12,0                       | 14                      |
| IMPACT STRENGTH $K_v$ @ -40 °C (J)                |   |                            |                         |
| Thickness from 6 - 8 mm                           |   | Thickness from 8,1 - 12 mm | Thickness from 12,1+ mm |
| 11  |   | 17                         | 22                      |

## **GENERAL WORKING INFOS**

Due to its chemical composition Swebor Armor™ 440 has good welding characteristics due to its low carbon equivalent. Furthermore it reaches good properties for cold bending, sawing, mechanical cutting as well as milling.

## **CONSULTANCY**

In order that Swebor Armor™ 440 withstands the different customer specific challenges, a careful production and operational planning is required. In this respect it is highly recommended to ask for professional advice which can be obtained by our expert staff or by third-party specialists of our cooperating partners.