



## Mars<sup>®</sup> 240

### Mars<sup>®</sup> 240: High Hardness Armor (500 HB) for ballistic protection

Mars<sup>®</sup> 240 is a high hardness (500 HB) protection steel offering the optimal combination of ballistic resistance and workability for the following applications:

- Very light to medium-weight vehicles structures
- Add-on armour of any thickness for usage up to heavy tanks.
- Boxes, containers, shelters, reservoirs, door frames, etc.

#### PROPERTIES

#### STANDARDS

##### INDUSTEEL: Mars<sup>®</sup> 240

Mars<sup>®</sup> 240 satisfies requirements of following specifications:

- > France                      **NF A36-800-1 THD2**
- > Germany                   **TL 2350-000 Quality Z**
- > U.K.                         **Def Stan 95-24 Class 3**
- > USA                         **MIL-DTL-46100**

#### CHEMICAL ANALYSIS - WEIGHT%

C	S	P	Si	Mn	Ni	Cr	Mo
≤ .30	≤ .002	≤ .010	≤ .4	≤ 1	≤ 1.8	≤ 1.6	≤ .6

Chemical composition depends on thickness range (particularly for Ni and Cr contents) and, possibly, on customer's specification.

#### MECHANICAL PROPERTIES

Delivery condition	Hardness	Yield Strength		UTS		Elongation 5d(%)	Charpy KV* -40° Transversal to rolling direction	
	HB	MPa	ksi	MPa	ksi		J	ft.lbs
Guarantees	477-534	≥1100	≥ 160	≥ 1600	≥ 232	≥ 9	≥16	≥ 12
Typical values	495	1300	189	1700	247	12	28	21

\* Standard specimen: 10 x 10 mm

#### HEAT TREATMENT

Mars<sup>®</sup> 240 is quenched and tempered at low temperature (≤200°C / 390°F).

## IN SERVICE CONDITIONS

### BALLISTIC PROPERTIES

See our table of recommended minimum thicknesses for protection

## DELIVERY CONDITIONS

### SIZES AND TOLERANCES

Mars® 240 can be supplied as standard size plates or tailor made mill plates.

#### Sizes

Thicknesses	2.5 - 50 mm (.098" - 2")
On request	above 50 mm (2") up to 150 mm (6")
Width	≤ 2500 mm (98")
Length	≤ 8100 mm (318")

For other sizes, please contact us.

#### Thickness tolerances (quarto plates)

(Possibility of tighter tolerances on request)

Thickness		Tolerance for width ≤ 2000 mm (≤ 79")		Tolerance for 2000 < width ≤ 2500 mm (79" < w ≤ 98")	
mm	inch	mm	inch	mm	inch
≤ 12	≤ .47	0,8	.03	1	.04
> 12 to 20	≤ .47 to .79	1	.04	1.2	.047
> 20 to 35	≤ .79 to 1.38	1.2	.047	1.4	.055
> 35 to 50	≤ 1.38 to 1.97	1.6	.063	1.8	.071

#### Flatness

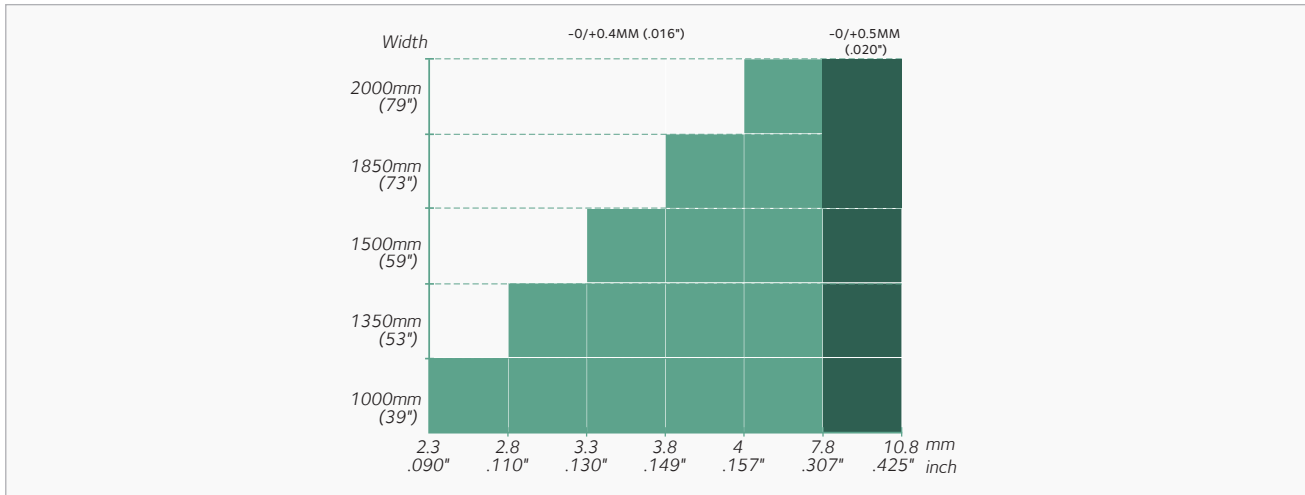
Our product are delivered with a guaranteed flatness ≤ 3mm/m (1/8" in every 40").  
95% of plates are delivered with a typical flatness ≤ 1.5 mm/m (1/16" in every 40").

#### Tight thickness tolerances (cut-to-length plates)

Thickness		Width		Tolerance
mm	in	mm	in	mm (in)
2,3 ≤ th < 2,8	0.091 < th < 0.110	1000	39.37	-0/+0,4 mm (-0/+0.016)
2,8 ≤ th ≤ 3,3	0.110 ≤ th ≤ 0.130	1350	53.15	
3,3 ≤ th ≤ 3,8	0.130 ≤ th ≤ 0.150	1500	59.06	
3,8 ≤ th < 3,9	0.150 ≤ th ≤ 0.157	1850	72.83	
4 ≤ th ≤ 7,7	0.157 ≤ th ≤ 0.307	2000	78.74	-0/+0,5 mm (-0/+0.020)
7,8 ≤ th ≤ 10,8	0.307 ≤ th ≤ 0.425	2000	78.74	

## DELIVERY CONDITIONS

### Tight thickness tolerances



### PARTS - KIT OFFER

Mars® 240 is also supplied as cut parts by laser or oxygaz/dry plasma (depending on thickness) up to finished complex parts and kits (formed, welded, machined, painted options...).

*Please contact us for your specific projects*

## PLATE PROCESSING

For all information concerning machining, thermal cutting, forming or welding, see our userguide for Mars® protection steels.

As a general rule, when using Mars® protection steel, the increased mechanical characteristics of this material must be taken into account.

It is crucial to wear appropriate individual safety equipment and to equip machines with collective protection.

## YOUR CONTACT

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Technical data and information are to the best of our knowledge at the time of printing. However, they may be subject to some slight variations due to our ongoing research programme on protection steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.