

# HOT ROLLED PICKLE AND OILED (HRPO) PRODUCTS

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# HOT ROLLED STEELS – PICKLED [TEMPERED] AND OILED

Hot Rolled Pickled and oiled product is steel that has been descaled, removing the iron oxide scale layer using hydrochloric acid. The material may also be supplied in tempered condition (skin-passed using temper rolls with specific surface roughness) to improve the shape flatness and to apply surface roughness on the strip to suit end-user requirements. Finally, the product is then oiled using rust preventative oil to help retard corrosion during storage, for a reasonable time period.

## 1. Product Data

Gauge range	1.2mm – 3.0mm
Width range	925mm – 1525mm
Coil weight range:	16 - 25.0 MT
Specific Coil Weight:	18 kg/mm
Maximum Coil OD:	1880 mm
Coil ID:	508 mm (610mm available by request)
Surface finish (If tempered):	Matte (0.6 – 1.9 Ra, 24 – 75 micro inches)
Oiling:	Minimum 1g/m <sup>2</sup> to maximum 3g/m <sup>2</sup> ,
Oil types:	Rust preventative oil

## 2. HRC Qualities available

### 2.1. SAE quality grades

SAE grades are suitable for general purpose.

SAE Grades available and chemical composition specification

Designation	% C	% Mn	% P	% S
SAE1006	0.06 max	0.40 max	0.020 max	0.020 max
SAE1008	0.08 max	0.45 max	0.020 max	0.020 max

### Mechanical Properties

SAE grades are supplied with no mechanical property values.

### 2.2. Forming or drawing quality grades

EN10111	ASTM A1011	Description	surface
DD11	CS Type A & B	Suitable for cold forming or drawing application	Non-critical
DD12	DS Type A & B	Suitable for severe cold forming or drawing application	Non-critical

## Mechanical Properties

EN10111 Steel grade	0.2% offset Yield strength, MPa (N/mm <sup>2</sup> ) <sup>1</sup>	UTS, MPa (N/mm <sup>2</sup> ), max	Elongation % min			Validity (months)
			<2.0mm	2.0mm ≤ e <3.0mm	≤3.0mm	
DD11	170 - 340	440	23	24	28	-
DD12	170 - 320	420	25	26	30	6

Note: For product thickness <2mm, 0.2% offset Yield strength values increase by 20MPa.

ASTM 10111 Steel grade	0.2% offset Yield strength, MPa (N/mm <sup>2</sup> ) <sup>1</sup>	UTS, MPa (N/mm <sup>2</sup> ), max	Elongation % min
DD11	205 - 340	-	≥25
DD12	205 - 310	-	≥28

### 2.3. Structural quality grades

EN10025-2 Steel grade	0.2% offset Yield strength, MPa (N/mm <sup>2</sup> ), min	UTS, MPa (N/mm <sup>2</sup> ), min	Elongation % min		
			≤2.0mm	2.0mm > e ≤2.5mm	2.0mm > e ≤3.0mm
S355 JR + AR	355	510 - 680	16	17	18

## 3. Product dimensional tolerances and surface characteristics

### 3.1. Thickness tolerance (mm)

Nominal thickness t	Specification tolerances	Tolerances for a nominal width, mm	
		w ≤ 1200	1200 < w ≤ 1500
t ≤ 2.00	75 % EN 10051	±0.13	±0.14
2.00 < t ≤ 2.50	75 % EN 10051	±0.14	±0.16
2.50 < t ≤ 3.00	75 % EN 10051	±0.15	±0.17

### 3.2. Width tolerance

Order width, mm	Tolerances, mm			
	Mill edges		Trimmed edges	
	Lower	Upper	Lower	Upper
$w \leq 1200$	0	+20	0	+3
$1200 < t \leq 1525$	0	+20	0	+5

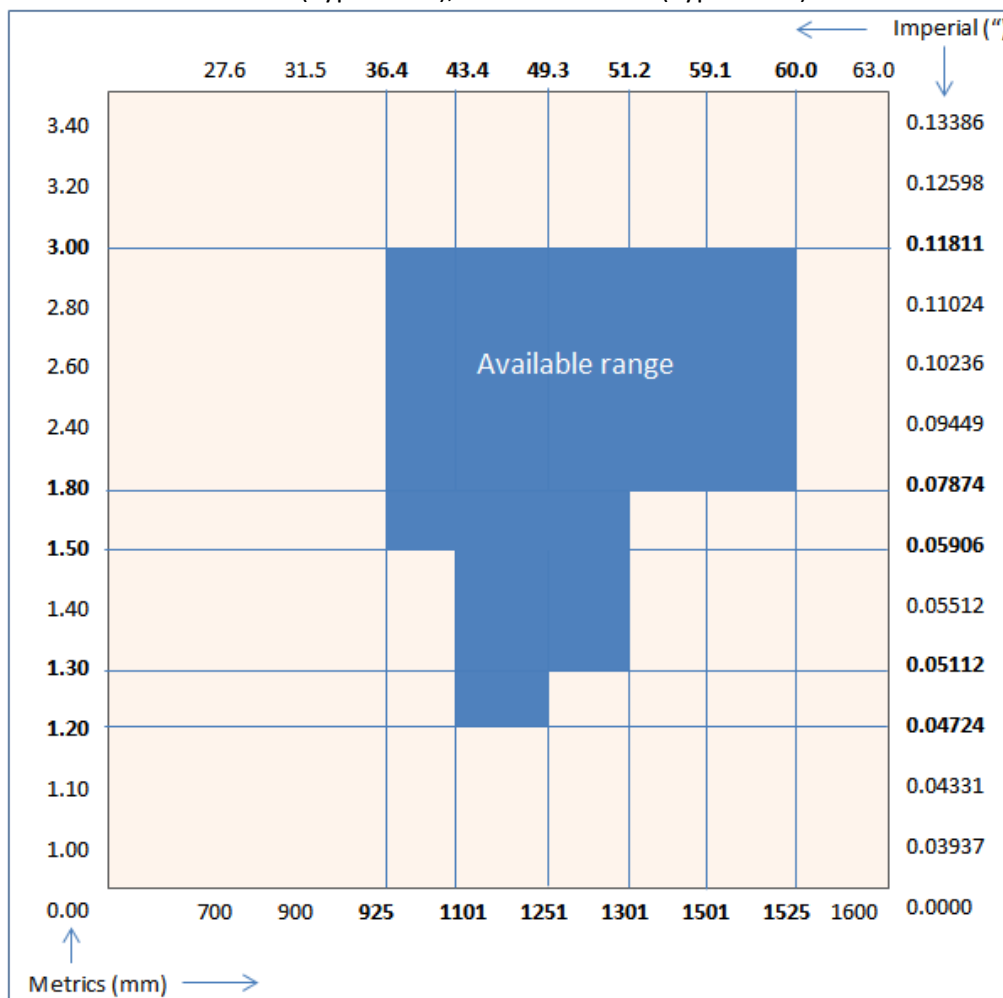
### 3.3. Surface characteristics

- 3.3.1. Worn work roll scale, roll marks, small scratches, kinks from payoff reels and slight discoloration are permitted.
- 3.3.2. The product is intended for non-surface critical end-use.

## 4. Applicable product dimension range (based on normal order gauge)

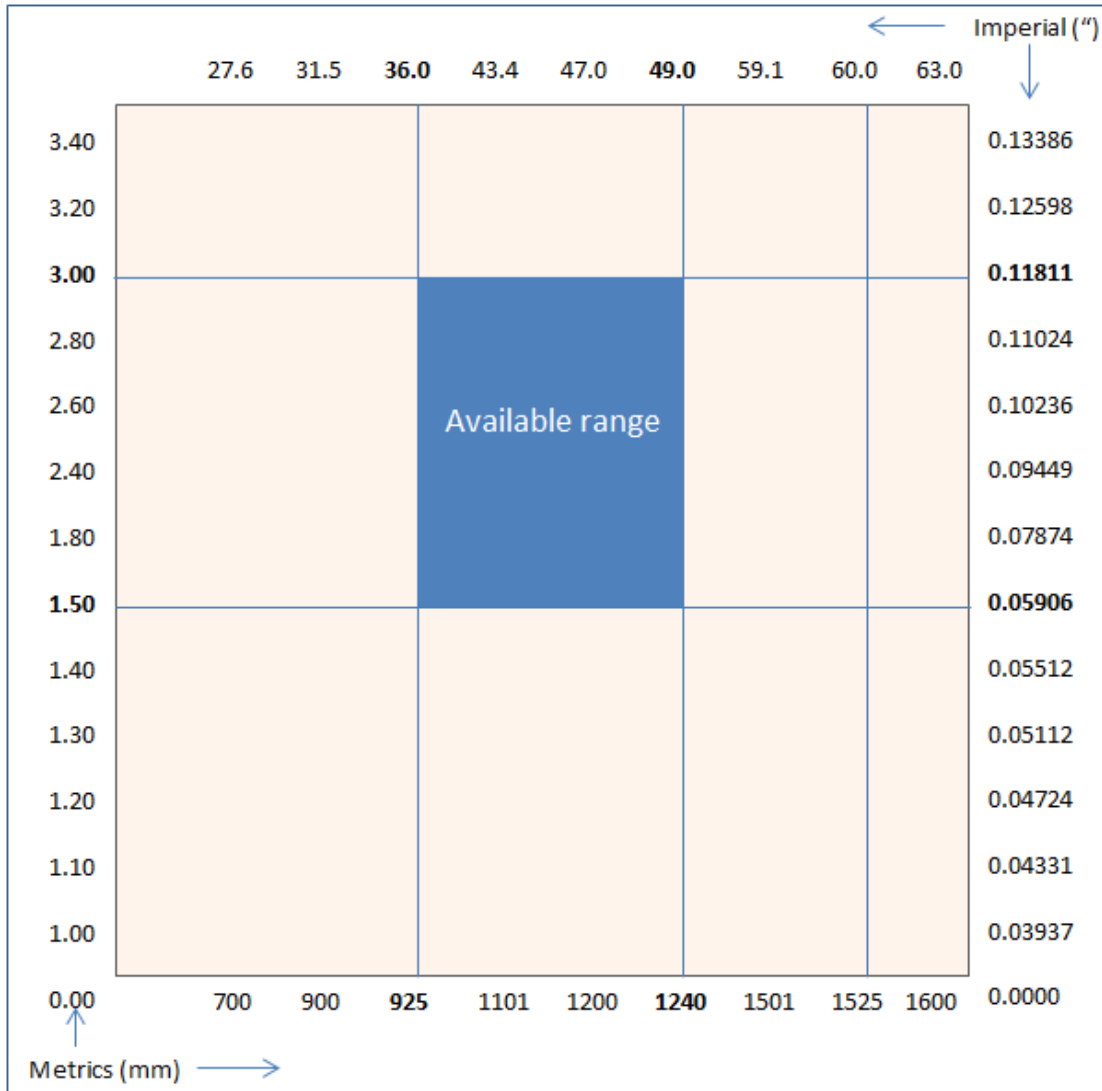
### 4.1. Commercial Quality

Applicable Quality standards: SAE 1006; SAE 1008; EN 10111 DD11; EN 10111 DD12; ASTM A1011 CS (Type A & B); ASTM A1011 DS (Type A & B)



## 4.2. Structural Quality

Applicable Quality standards: EN 10025 S355 JR + AR



## 5. General Notes

- 5.1. Gauges  $\leq 1.80$  mm is not recommended for shape/flatness critical applications.
- 5.2. When ordering non-standard widths or gauges below 2.0mm the absorption of stepdown gauges requested by the HRC supplier are to be discussed on a case by case basis with Marketing.