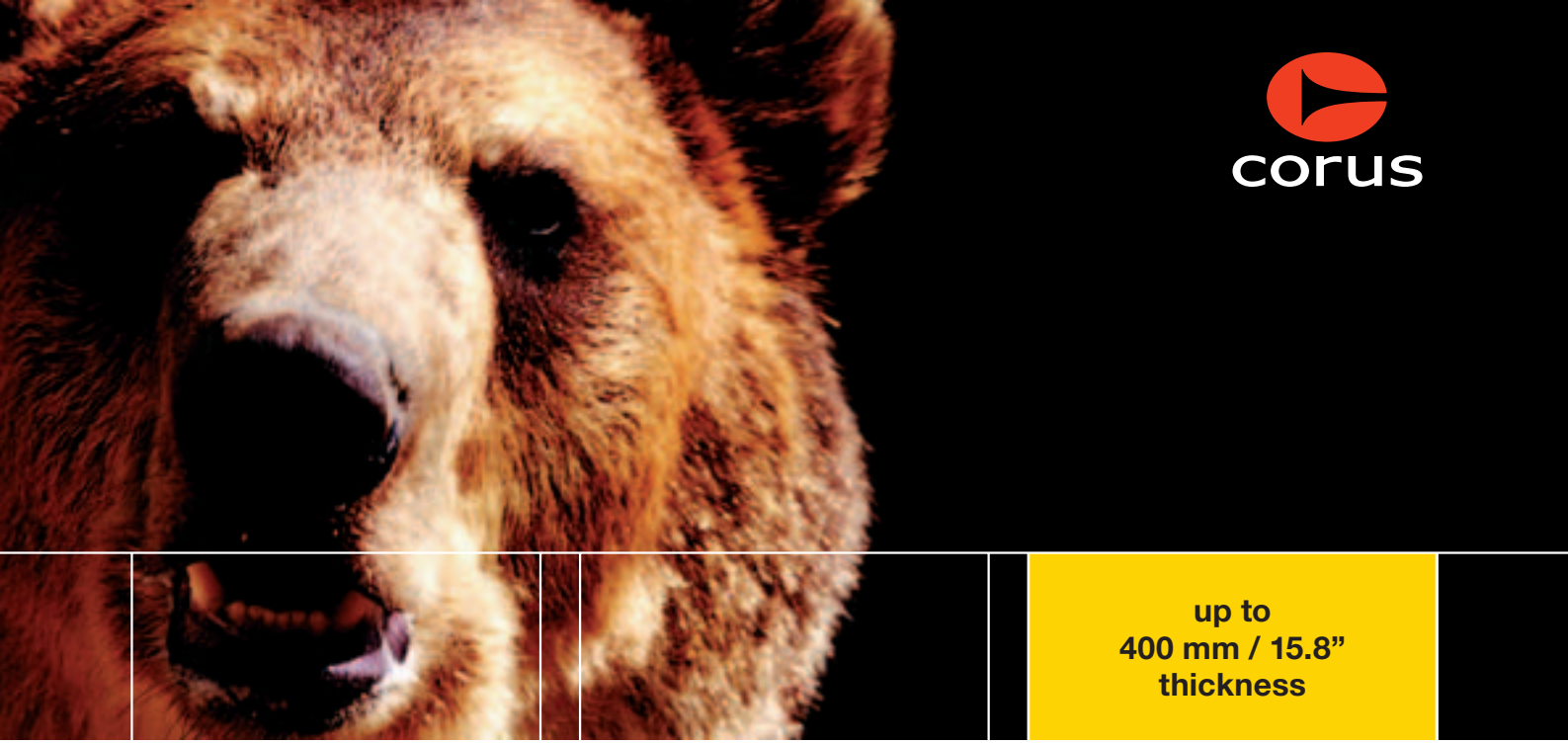


up to 400 mm / 15.8” thickness

The high-strength alloy: HOKOTOL

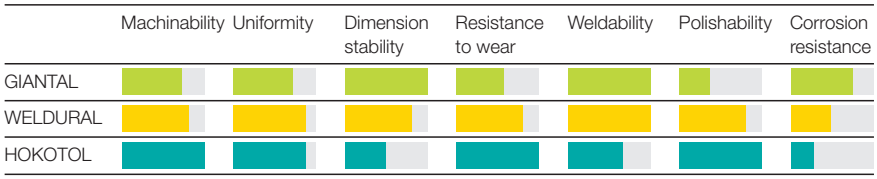
Characteristics

- low weight (approx. three times lighter in comparison to steel)
- excellent machinability (approx. five times better in comparison to steel)
- extreme uniform mechanical properties across the total thickness
- excellent mechanical properties in the centre of the plate
- excellent dimensional stability by stress relieved stretching or cold compressing
- excellent thermal conductivity (approx. four times higher in comparison to steel)
- excellent electrical conductivity (approx. two times higher in comparison to steel)

Fields of application

- moulds for blow forming and injection moulding for the plastic processing industry
- bolsters and force plates (punching technique)
- machine parts for high strength requirements at a low weight
- mechanical components with elevated mechanical properties

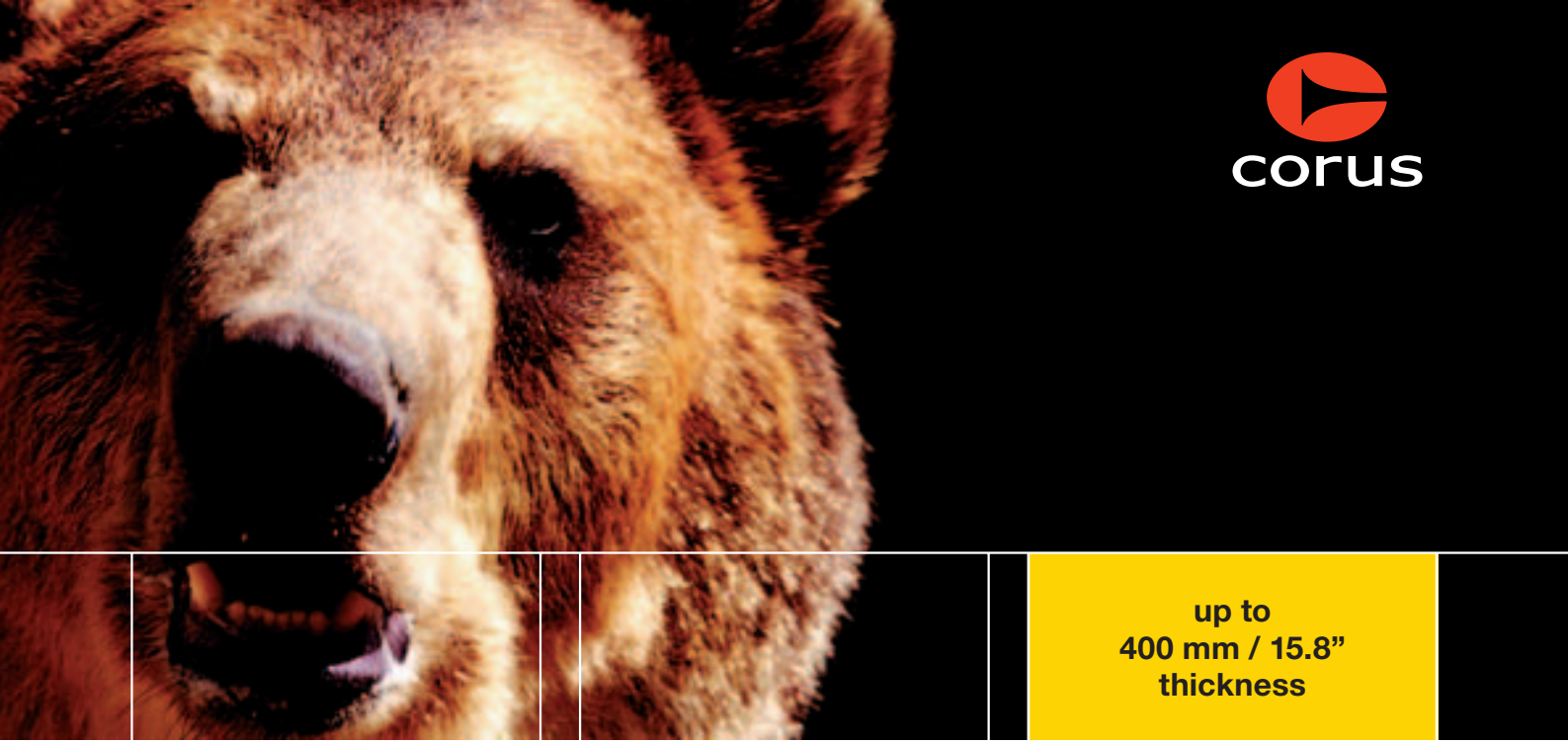
Characteristics of GIANTAL, WELDURAL and HOKOTOL



not suitable → very good suitable

Chemical composition

	Chemical elements	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr	Other Individual	Other Total
HOKOTOL	Min. weight (%)	0.00	0.00	1.5	0.00	1.8	0.00	5.7	0.00	0.08	0.00	0.00
	Max. weight (%)	0.30	0.35	2.6	0.1	2.6	0.05	7.6	0.06	0.25	0.05	0.15



up to 400 mm / 15.8” thickness

Physical properties in comparison to steel

Property	Hardness	Density		E-Modulus		Coeff. of thermal expansion 20-100°C (68-212°F)	Thermal conductivity at room temperature		Electrical conductivity at room temperature	
	HB	g/cm³	lbs/ins³	MPa	ksi	$10^{-6} \cdot K^{-1}$	W/(m · K)	BTU · ins/ft² · h · °F	m/Ω · mm²	%IACS
HOKOTOL	180	2.83	0.10	70,300	10,200	23.5	154	1,067.8	23.0	39.7
Steel 1.2312 (40CrMnMoS86)	300	7.85	0.28	215,000	31,200	12.5	35	242.7	10.3	17.8
Relation Al : St	1 : 1.7	1 : 2.8	1 : 2.8	1 : 3.1	1 : 3.1	1.9 : 1	4.4 : 1	4.4 : 1	2.2 : 1	2.2 : 1

IACS = Int. Annealed Copper Standard; BTU = British Thermal Unit

Typical tensile properties for various thicknesses

Thickness		Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation (2”) A_{50}
mm	ins	MPa	ksi	MPa	ksi	%
100	3.9	575	83.4	535	77.6	7.5
200	7.9	545	79.0	485	70.3	4.0
300	11.8	515	74.7	455	66.0	2.0
400	15.7	485	70.3	415	60.2	2.0

at room temperature; measured at S/4; test direction L-T

Comparison of various mould alloys dependent on the used type of plastic and the typical number of closures

Type of plastic	Typical number of closures < 1,000	< 50,000	< 150,000	< 500,000	< 2,000,000
Common plastics PP - PE - PET - PS - ABS				(if mirror finished)	(if mirror finished)
PPO - PMMA - PC - PA - POM					
Talc charged plastics				(if surface coated)	
GF charged plastics			(if surface coated)		
Elastomers NR - EPDM - NDR					

GIANTAL WELDURAL HOKOTOL Steel

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