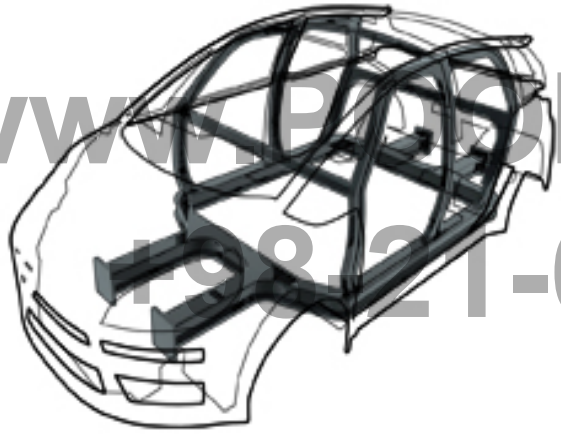
more with metals

Litec ultra high-strength formable steel



When applications demand cold formability, high strength, good corrosion resistance and light structures, Ruukki´s range of metal-coated, ultra-high-strength formable steels are recommended.

Applications:

- Frame and cross beams
- Vertical beams
- Side impact beams
- Safety components

Dimensions

Surface quality A or B.

Widths with mill edges.

	Litec 600CP+ Litec 600DP+	Litec 800CP+ Litec 800DP+	Litec 1000DP+	Litec 1000CP+
Thickness mm	Width mm	Width mm	Width mm	Width mm
0.70 - 0.79	1000 - 1260	-	-	To be agreed separately for each order.
0.80 - 0.94	920 - 1290	1000 - 1210	-	
0.95 - 0.99	920 - 1290	1000 - 1290	-	
1.00 - 1.19	920 - 1410	1000 - 1290	1000 - 1210	
1.20 - 1.24	920 - 1410	1000 - 1415	1000 - 1250	
1.25 - 1.34	920 - 1520	1000 - 1390	1000 - 1250	
1.35 - 1.49	920 - 1520	1000 - 1440	1000 - 1250	
1.50 - 1.80	920 - 1520	1000 - 1445	1000 - 1250	
1.81 - 2.00	1000 - 1520	1000 - 1445	1000 - 1250	
2.01 - 2.19	1000 - 1520	1000 - 1250	-	
2.20 - 2.50	1000 - 1350	1000 - 1250	-	

Our service centres also provide other sheet and strip lengths, as well as processing options.

Tolerances

The tolerances on metal-coated sheet steel products manufactured by Ruukki are mainly in accordance with EN 10143:2006.

Products are delivered with the normal tolerances. Special tolerances can be agreed on separately at the time of order.

Coating & surface

Coating materials

The zinc coating (Z) of Litec steels is lead-free, as a result of which the zinc crystallizes into a minimised, even spangle that meets high requirements set for appearance. Thanks to the good formability of lead-free coatings, the corrosion protection, for example, in areas which have been bent is good. The small spangle coating is designated by the letter M.

Galfan (ZA) is a zinc-aluminium alloy coating with an aluminium content of approximately 5%. This coating has better anticorrosive and forming properties than normal zinc coatings. The surface is uniform and smooth.

Galvannealed (ZF) is a zinc-iron alloy coating. It is produced by means of heat treatment and gives the zinc an iron content of about 10%. ZF coated steels are excellent for resistance welding applications and are designed for use in high-quality paint-coated products. The surface produced is greyish and matte.

Surface quality

Normal surface (A)

Flaws in the surface such as local roughness, imprints, scratches, small pits, variation in pattern size, dark spots, stripe marks and minor passivation stains are allowed. Run-off marks may appear.

Improved surface (B)

Improved surface (B) is obtained by skin pass rolling. Minor flaws in the surface, such as skin pass marks, minor scratches, small indentations, run-off marks and minor passivation stains are allowed.

Surface treatment

Chemical passivation or oiling is usually used to protect the surface against white rust, caused by moisture, during transport and storage.

Litec steels are usually delivered in the oiled condition (O) but chemical passivation (C) or both chemical passivation and oiling (CO) are available on request.

Should a customer so wish, the surface can also be left unprotected, but this is at their own risk.

Properties

DP steels

Dual-Phase (DP) steels are steels which have a multiphase microstructure consisting of a dispersion of hard martensite islands. Characteristic of these steel grades is low yield strength / tensile strength ratio (R_p/R_m). In particular, the level of strain hardening is high at the beginning of forming, as a result of which stretch forming properties are good.

CP steels

Complex-Phase (CP) steels are steels with a ferrite/ bainite matrix containing martensite. Precipitation hardening can be used, if necessary, to complement these strengthening phases. Thanks to the structure of these steels, the yield strength/tensile strength ratio (R_p/R_m) is significantly higher than that of DP steels. CP steels are the best choice for applications demanding high strength and small bending radius.

TRIP steels

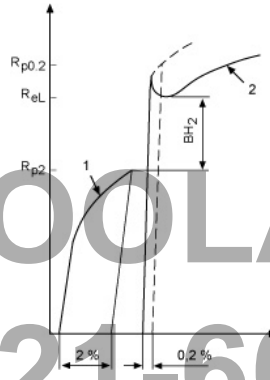
TRIP (Transformation Induced Plasticity) steels have excellent formability. This makes them suitable for components with a complex shape and requiring high strength and good energy absorption capability. The excellent combination of high strength and formability of TRIP steels is the result of the phase transformation of the retained-austenite to martensite during the forming process.

Litec steels do not usually age but they bake harden at elevated temperatures.

Determination of bake hardening (BH_2)

1. Plastic prestrain of 2 %.
2. Tensile test after heat treatment.

After prestrain of 2 % the test piece is heated at 170°C for 20 minutes. The tensile test is carried out after this.



Mechanical properties and coatings

Testing direction is transverse to the rolling direction.

Steel grade	Yield strength $R_{P0,2}$ MPa Minimum	Tensile strength R_m MPa Minimum	Elongation A_{80} % Minimum Thickness mm			Bake hardening BH_2 MPa Minimum [3]	Coatings [4]
			≤ 0.50	0.50 - 0.70	> 0.70		
DP-steels							
Litec 600 DP	340 – 420	600	16	18	20	30	Z, ZA, ZF [5]
Litec 800 DP	450 – 560	780	10	12	14	30	Z, ZA, ZF [5]
Litec 1000 DP	600 – 750	980	6	8	10	30	Z, ZA [1], ZF [1]
CP-steels							
Litec 600CP	350 – 500	600	12	14	16	30	Z, ZA, ZF [5]
Litec 800CP	500 – 700	780	6	8	10	30	Z, ZA, ZF [5]
Litec 1000CP	700 – 900	980	3	5	7	30	Z, ZA [1], ZF [1]
TRIP-steels							
Litec 700TRIP [1]	430 – 550	690	19	21	23	40	Z
Litec 800TRIP [2]	470 – 600	780	17	19	21	40	Z

[1] Supply of this steel grade must be agreed separately.

[2] Under development.

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Version 17.05.2011