

## Cladding composite **FERAN®** (One or both side aluminium cladded steel strip)

### Brief description

FERAN® is a single or double side cold rolled cladded steel strip, combines forming and mechanical properties of low carbon, unalloyed deep drawing steel with mechanical and decorative properties of aluminium.

### Standard - raw materials

Position	Material	Description	Grade	Standard
Core	Unalloyed deep drawing steel	similar to DD11 <sup>1)</sup>	1.0332	DIN EN 10111
Cladding layer	Aluminium	similar to AL 99,0	3.0205	DIN EN 573-3

<sup>1)</sup> Regarding to DD11 considering steel aging phenomenon

### Standard sizes

Thickness: 0,08 - 3,5 mm

Width: 20 - 780 mm

Sheet length: 500 - 4.000<sup>1)</sup> mm

Sheet thickness: 0,3 - 2,5 mm

Sheet width: 100 – 700 mm

<sup>1)</sup> Maximum sheet width depends on the sheet thickness

### Cladded layers and adhesion

Layer thickness: according to standard will be 3/3, 5/5, 7/7 or 10/10% of strip thickness, alternatively one-sided or difference cladding on request.

Adhesion: Not possible to strip off the cladded layer from the steel core

Measuring of the layer thickness: Magnetic force, metallographical or gravimetric

## Mechanical properties

The following table shows mechanical data of Feran with aluminium layer of max. 10/10% after skin pass operation and after the steel aging process is completed.

Surface condition	Mechanical strength	After skin pass <sup>1)</sup> (less. 2 days)			Aging completed <sup>2)</sup> (>= 1 month)		
		R <sub>p0,2</sub> <sup>3)</sup> [MPa]	R <sub>m</sub> <sup>4)</sup> [MPa]	A <sub>80</sub> <sup>5)</sup> [%]	R <sub>p0,2</sub> <sup>3)</sup> [MPa]	R <sub>m</sub> <sup>4)</sup> [MPa]	A <sub>80</sub> <sup>5)</sup> [%]
Mill finish	LC	max. 250	270-370	min. 30	max. 300	290-390	min. 27
Bright	LC+	max. 280	270-370	min. 28	max. 330	290-390	min.22

1) Data are shown on certificate, 2) Typical Data measured in material flow

3) Yield point, 4) Tensile strength, 5) Elongation (Ultimate strain)

On request is available FERAN rolled to mechanical properties rolled close to C290-C690 according to standard EN 10139.

## Specific Performances of FERAN®

Because of using a specific steel grade for the cladding process, the core strip is no non - aging material, i.e. mechanical and technological values of the steel change as a function of the from-bin transfer time.

Higher temperatures accelerate this process. Phenomenological, it is characterized by a distinct yield strength during the tensile test.

## Surface Conditions

Description	Characteristics	Roughness Ra
bright	Bright, metallicly clean surface. Pitting, grooves and scratches are permitted as long as the uniform smooth appearance is not essentially impaired when viewed with the naked eye.	< 0,10 µm
mill finish	Metallicly clean surface. Pitting, minimal defects and scratches are acceptable in a scale not impairing the technical function of the outside layers of the composite material.	0,15 – 0,80 µm
isotropic		1,0 – 2,0 µm

## Tolerances

Size limits of thickness	- according to classes A, B, C	of DIN EN 10140
Size limits of width	- according to classes A, B	of DIN EN 10140
Size limits of length	- according to classes A, B	of DIN EN 10140

## Edge type

GK, NK according to DIN EN 10140

## Delivering types

Strips, sheets

## Ordering example

Every order should be specified in consideration of the following information based on this material data sheet:

Product feature	Example 1	Example 2
Cladding composite	Feran	Feran
Layer P(side1-side2) [%]	P(05-05)	P(10-00)
Strength condition	LC+	LC
Surface quality	bright	regular
Edge type	GK	GK
Delivering type	Strips	Sheets
Thickness (tolerance) x width (tolerance) x length (tolerance)	0,80 (+/- 0,025) x 100 (+/-0,13) mm	1,20 (+/-0,030) x 420 (+/-0,30) x 1.500 (-0/+6) mm

## Miscellaneous

All information in this material data sheet is referring to FERAN® materials based on a standard production.

Further product features on request.