

DANCUT

Top-quality knives for long product rolling mills: the latest technological solutions.

Danieli target is to supply the best technical and economical solution for customer's specific shearing application. For this purpose, four different blade materials has been developed:

- > **DanCut 510** (hot cutting)
- > **DanCut 550** (cold cutting after QTB)
- > **DanCut 850** (intermediate hot cutting)
- > **DanCut 345** (cold cut-to-length)

Materials and knife shape are chosen by Danieli engineers according to specific

shearing application to achieve the best performances as of lifetime and reliability. All DanCut production cycles are carried out in compliance with Danieli Quality Control Plan QCP: from engineering and knives design, through the supply of materials, up to manufacturing with an accurate programming and control of CNC machining cycles and heat treatments. Danieli Service provides its knives with extensive information and assistance for proper setting -up, grinding, and refurbishment services, so as to maximize their lifetime.

DanCut knives are designed to ensure as many multiple grinding operations as possible. Thanks to refurbishing operations and the supply of customized shims, our customers will always have new knives with the same cutting quality and a longer total lifetime. The regrinding process is integrated with a feedback and monitoring system for the total traceability of each DanCut knife supplied.



DANCUT
>Danieli knives
for long product
rolling mills<

DAN CUT



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DANIELI THE RELIABLE
AND INNOVATIVE PARTNER
IN THE STEEL INDUSTRY

DanCut: top-quality knives for long product rolling mills, with all Danieli design and process know-how, and manufactured using the latest technological solutions.



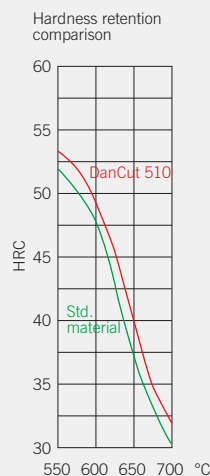
DanCut 510

Extreme wear resistant material for hot cutting application

Cause of wear	DanCut solution
Abrasion	> High content of carbide-forming elements such as Cr, Mo, V.
Softening by overheating	> High thermal conductivity and presence of alloying elements improving the retention of hardness.
Permanent deformation	> High resistance to material overheating due to specific electro-slag remelting of blades.

Knives material	Carbide forming elements (*)	Retention of hardness
Standard hot shearing steel grade	6.7% max	Standard hot shearing material (—).
DanCut510	7.5% (DanCut 510 reaches +11% of carbides with respect to standard steels).	DanCut510 (—) maintains approx. 2 HRC points more than standard materials if overheated above its tempering temperature.

(*) in % of total chemical composition.



DanCut 550

Revolutionary material for rebar shearing after quenching boxes (patented)

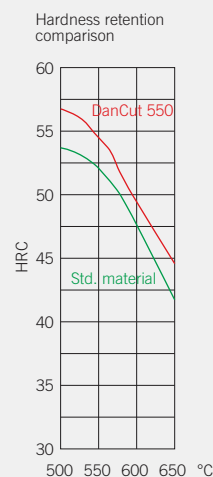
DanCut550 is an unique material with patented chemical composition and manufacturing process that combines all characteristics of tool steels for hot and cold shearing, so as to properly shear

rebars during tempering. DanCut 550 can shear cold martensitic rebar surfaces with still hot austenitic rebar cores, without any plastic deformation or chip-off of cutting edge.

Cause of wear	DanCut solution
Abrasion	> High content of carbide-forming elements.
Cutting edge chip-off	> High impact strength thanks to specific secondary metallurgy processes and increased small carbide-forming elements.
Permanent deformation	> High mechanical properties such as hardness and compressive strength.
Contact area softening	> Very high thermal conductivity and large amount of alloying elements improving the retention of hardness.

Knives material	Hardness	Compressive strength	Impact strength (*)	Retention of hardness
Hot shearing steel grades	48-52 HRC	2029 MPa	10 J	Standard hot shearing material (—)
Cold shearing steel grade	52-56 HRC	2484 MPa	7 J	—
DanCut 550	56-58 HRC	2610 MPa	13 J	DanCut550 (—) keeps a better hardness than standard hot-shearing tool steels if overheated above its tempering temperature.

(*) performed with Charpy-V test



DanCut 345

Outstanding performances material for cold cut-to-length shearing

Cause of wear	DanCut solution
Cracks	> presence of 4% Ni in the alloy that improves the impact strength (toughness) without reducing the blade hardness.
Jagged cutting edge	> reduced amount of big-dimension carbide forming elements that act as point of concentration of tensions.
Permanent deformation	> High mechanical properties (in particular yield strength) thank to the balance of Cr and Mo.

Knives material	Toughness	Hardness
Standard steel grade	50-54 HRC	10 KV (J)
DanCut 345	54-56 HRC	12 KV (J)

Thank to its chemical composition DanCut345 reaches hardness values higher than other steel grades. Moreover, it has a stronger impact strength (toughness).

DanCut 850

High-performance knives for intermediate conditions on cut to length area. Cut to length Temp. from 300 °C to 700°C-850°C.
 > The high ductility of DanCut 850 allows to obtain a longer tool life and more constant production thanks to less maintenance.
 > The high hardness and strength together with excellent dimensional stability make DanCut 850 an excellent substrate for surface coatings.
 > DanCut 850 boasts excellent hardenability and unique characteristics that make it particularly suitable for the production of large molds. For this reason DanCut 850 is supplied in very large formats.