

Safety requirements for handling spring back sensitive coils

Introduction

Coil handling practices must take into consideration the fact that all steel coils exhibit some degree of spring back effect, i.e. the coiled material has the tendency to return to its (almost) flat state and as such the coil will unwind if it is not restrained in some way. The unpacking of steel coils is therefore a potentially dangerous operation and operators must follow safe unpacking and handling procedures.

Material identified as 'spring back' must be handled with extreme care. Failing to do so may lead to physical injuries caused by the unraveling of the coil tail during handling or when one or more straps are cut.

Definition of spring back

The level of the hazard from a coil is proportionate to the energy that is built-up in the outer laps of the coil during coiling. The higher the yield strength (R_p) of the product, the greater the energy in the coil tail. The risk increases with: increasing thickness; increased width; reduced coil diameter; and also surface coating. Spring back sensitive material can also be produced by certain processes in the production route, for instance by cold forming and rewinding.

When this energy within a spring back coil is released it results in the outer lap of the coil springing back over and around the coil and hitting anything in its way with potentially extreme force. If the coil is suspended when this happens the outer laps can unwind in a similar way to a watch spring.

Tata Steel Europe is starting to introduce a new label for coils that exhibit spring back characteristics (see figure to the right).

The QR code on this label takes you to a website where the current version of this document and the latest information regarding spring coils can be found.



Coil handling

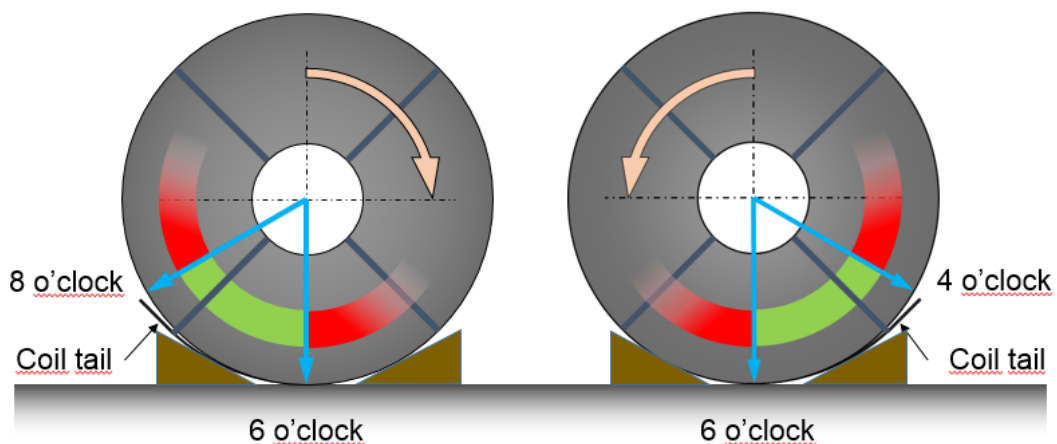
Never stand in-line with the (un)winding direction of the coil during handling. Never handle or transport coils where the number of straps is not in line with the information on the label¹. Missing bands should be replaced before the coil is handled/transported further. Before the coil is unpacked or bands are removed, replaced or added, it must be positioned so that the coil is sitting on the coil tail (see section 'Coil positioning').

¹ At this moment the number of required bands are only available on labels on hot rolled coils produced in IJmuiden.

For safety reasons the operator handling/unpacking the coil must take suitable measures and wear proper personal protective equipment in line with local regulations (e.g. helmet, cut resistant gloves, safety goggles, safety shoes and proper working clothes).

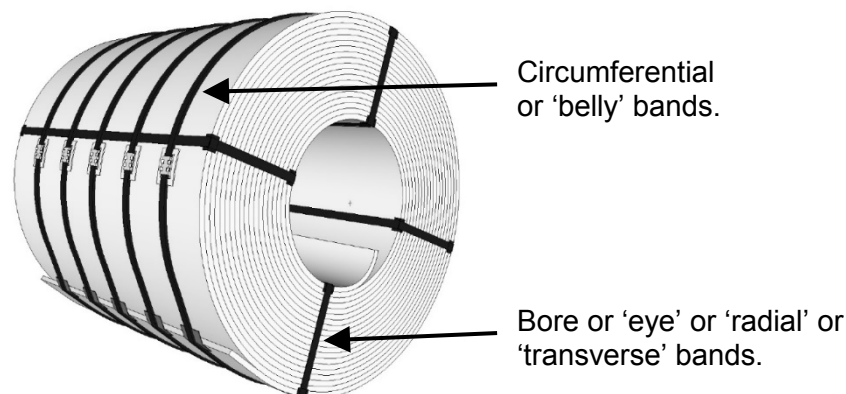
Coil positioning

To prevent spring back of the coil tail or unwinding of the coil, the coil tail must be placed under the coil ending between 4 o'clock and 6 o'clock or between 6 o'clock and 8 o'clock depending on the winding direction (see figure below). If this is not the case, the coil must be readjusted to a safe position by placing and rotating the coil on suitable equipment such as a mandrel or positioning rolls.



Banding removal

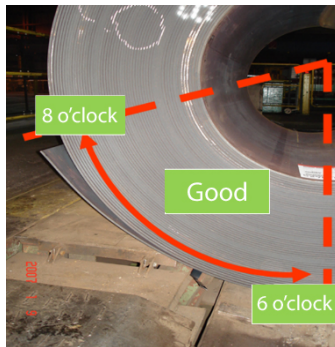
Removal of the banding should be undertaken with the coil resting on appropriate rolls, stands or unpacking pins. Banding should never be removed from a coil suspended from an overhead crane or forklift.



Bore bands should be removed before removing the circumferential bands. Circumferential bands must not be removed until the coil is safely resting in the correct position on the decoiling installation.

If banding is to be removed manually, the outer straps should be cut last and from a position that does not place the operator directly in line with the (un)winding direction of the coil. Do not stand in-line with the (un)winding direction of the coil; the coil may act as a spiral (watch) spring.

Appropriate tools such as shears designed for cutting bands must be used.



The coil is positioned on the coil tail and the tail is locked in position by the weight of the coil.



Coil tail is not positioned under the coil, as result the tail can spring back. The operator is not standing in the correct position.

All bands on the delivered coil should be present during transport. It is not allowed to transport the coils after the bands have been cut.

When partial de-coiling takes place, the safety banding must be restored, respecting both the number, position and type of bands. Note that when the diameter decreases, the number of bands may need to be increased.

Returning coils

Coils returned to Tata Steel Europe must have the same number and type of bands as at delivery. In addition, spring back sensitive material must carry a clear spring back indication on the coil.

Further questions

For questions or remarks, please contact your usual Tata Steel Europe technical contact.

An electronic version of this document is available on the website

www.tatasteeleurope.com/springbacksafety

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