

Non-real rolled in scale found at cold rolling

a. Scale pressed into steel surface at subsequent lines such as pickling line

Pattern and shape

1. At delivery side of pickling line small black spot like scattered sands scale is found.

Cause of generation

1. Peeled-off scale particles at uncoiler are pressed into the strip furnace at uncoiler leveler and tension leveler
2. Strip with high CT, surface scale is thick and easy to be peeled off, frequently has the problem

Measures to prevent

1. Use much water at uncoiler leveler and tension leveler to wipe off peeled scale.

## b. Attached scale particles after finisher stands

### Pattern and shape

1. It generates at bottom surface of strip and mainly exists at latter half of strip HSM.
2. Very small scale particle or powder scatters and they are pressed into the surface and still remains after pickling line.

### Cause of generation

1. Usually apron surface just after F7 work roll is sprayed by side spray. If the side spray does not work correctly, scale particles on the apron were not removed and stick to the bottom surface of strip. With the combination effect with levelers at pickling line, the stuck particles are pressed into bottom surface and difficult to remove even after pickling line.

### Measures to prevent

1. Check F7 delivery apron condition, such as correct use of side spray.

### c. ROT table roller scratch

#### Pattern and shape

1. After cold reduced very small needle-like defect was found.
2. Bottom surface and head portion (4 ton) at HSM

#### Cause of generation

1. Rough ROT table rollers

#### Measures to prevent

1. Changeover of table rollers and installation of water headers for table rollers

#### d. Rust hole by water

##### Pattern and shape

1. After cold reduced very small scale like defect was found.
2. The reduction of the coils with the above mentioned defect was small, around 50%.

##### Cause of generation

1. Rust hole or pit by water cooling.

##### Measures to prevent

1. Prohibition of water cooling after coiler for the coils with small cold reduction