

CATALOGUE OF DEFECTS ON WIRE ROD

DIRECTION OPÉRATIONNELLE ACHAT

04/16/2024

SUBJECT

The target quality level is a defect-free product.

The purpose of this document is to define:

- The anomalies that may occur during the purchase of Wire Rod (Metal category)
- The level of quality that can be tolerated for each anomaly that, in certain specific cases, will be identified and reported to the customer.

APPLICATION FIELD:

This document is to be used by all MICHELIN Group Wire Rod suppliers throughout the world.

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1 – Means of detection

On receipt, by visual inspection when checking the appearance of the coils.

When preparing samples for incoming inspection

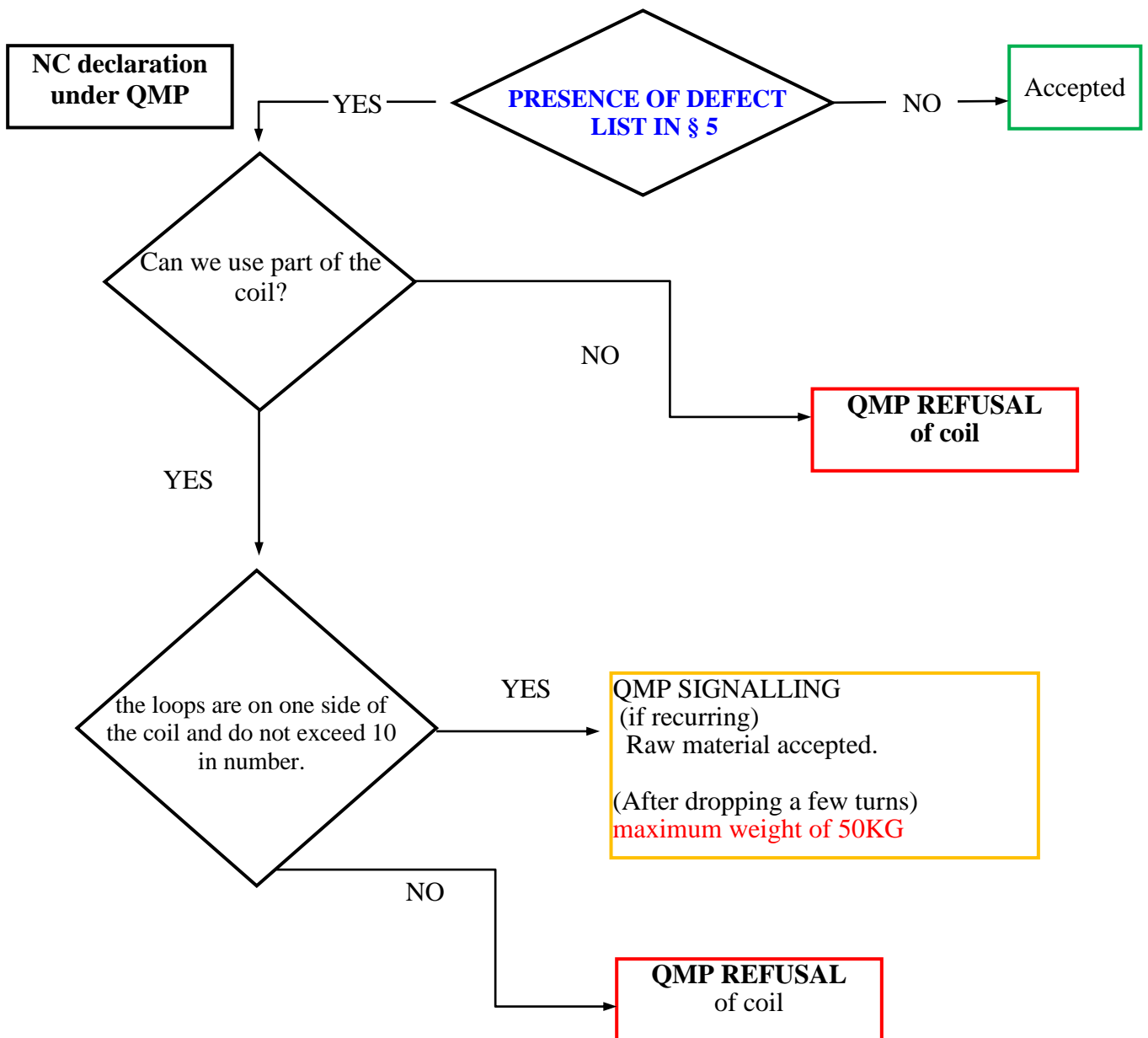
2 – Specifications

No defects listed in paragraph 3 in addition to the specifications.

3 – List of defects requiring visual inspection

- 1) Pollution
- 2) Oxidation
- 3) Friction
- 4) Deformation
- 5) Winding defect _ traverse winding
- 6) Crossed coils
- 7) Cut coils
- 8) Defect of pustule scale (blisters)







4 – Rules of actions :







COILS CLASSIFICATION:

- Without defects → Accepted
- With localised defects → Accepted after dropping a few loops (about 10 loops)
- With general defects → Refused

Criteria	Pollution	1
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Definition:	Pollution is the contamination of the wire rod by an external element.	
Basis of assessment	The wire rod received in our storage warehouses will be free of pollution	
Photos or diagrams	<p>1) example: Bird Dropping</p> <div>   </div>	
	<p>2) example: Soil</p> <div>   </div>	
	<p>3) example: Cardboard</p> <div>   </div>	

	<p>4) Example: Pollution with grease</p> 				
	<p>5) Example: Pollution with condensation (water droplets)</p> 				
	<p>6) Example: pollution with paint</p> 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	No pollution	Presence of pollution
FM	***	***	0	Accepted	Refused

Criteria	Oxidation	2
Definition:	Oxidation of wire rod is the chemical action of a substance combining with oxygen.	
Basis of assessment	Wire rod received in our warehouses will be free of type 2 and 3 oxidation. Type 1 oxidation will be accepted only if it is localized to a few loops at the ends of the coil and on one side only. a few loops at the ends of the coil and on one side only.	
Photos or diagrams	<p>1) Example: pollution with paint</p> <p>TYPE 1: SUPERFICIAL OXIDATION localized on some wire loops at the end of the coil, (on one side)</p> 	

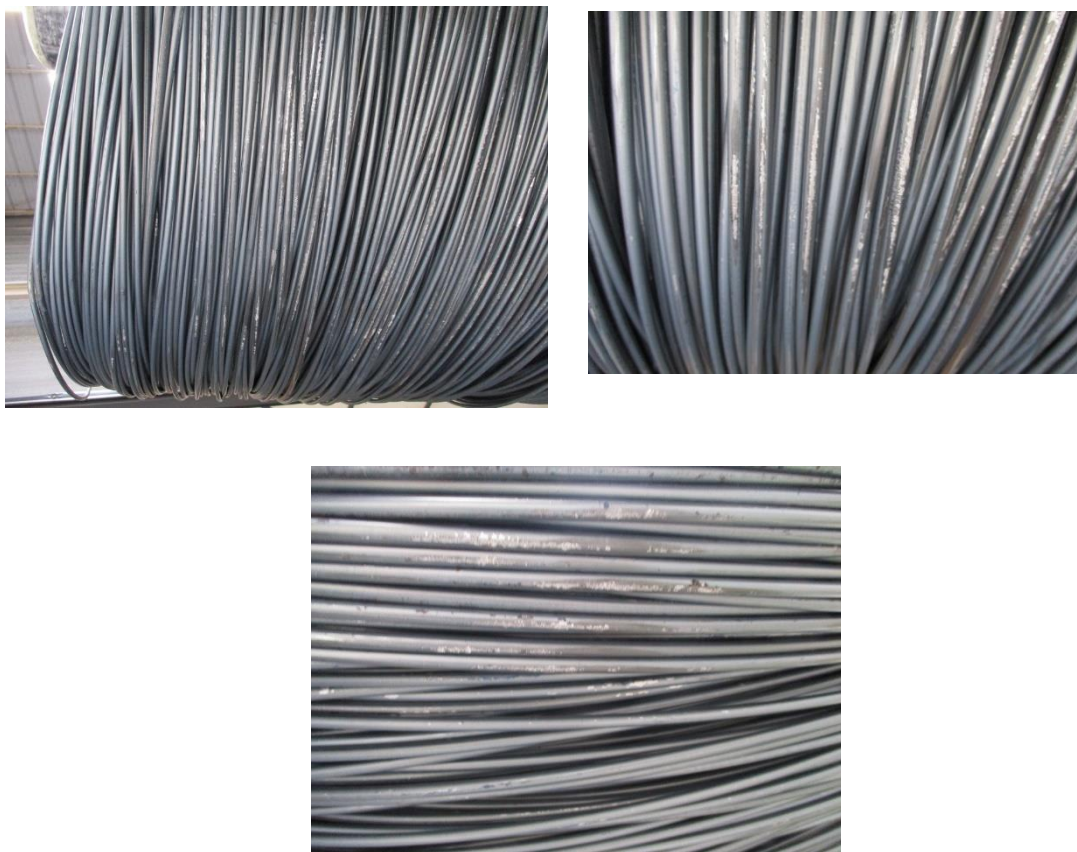
2) TYPE 2: Superficial oxidation in the middle of the coil or on both sides or generalized oxidation





3) TYPE 3: Deep oxidation localized or generalized.




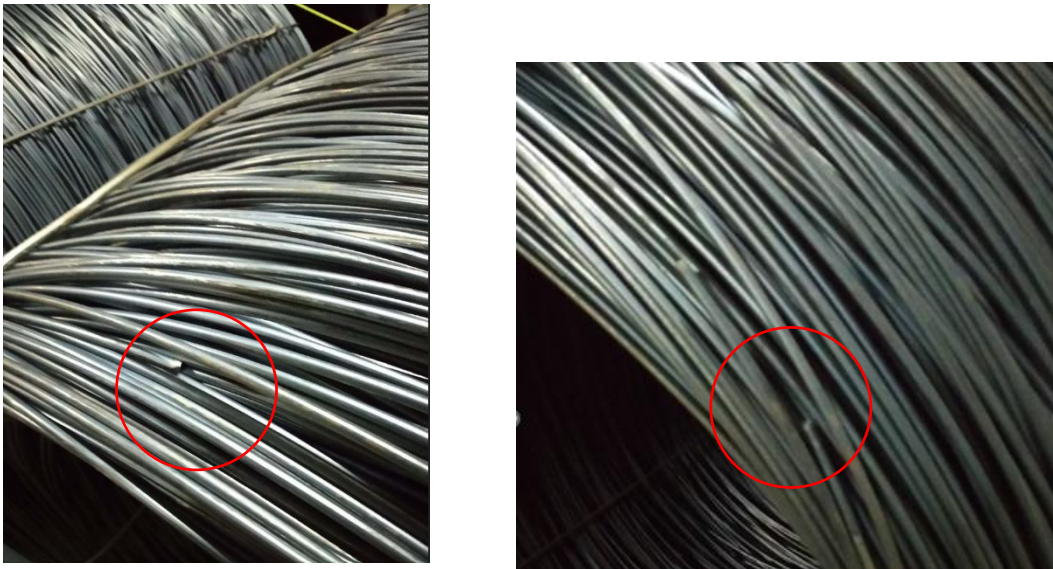
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	No oxidation	Presence of oxidation
FM	***	***	0	Accepted	Refused

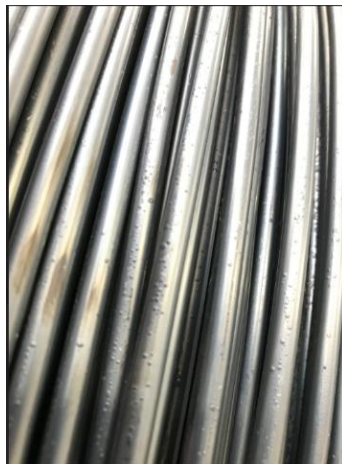
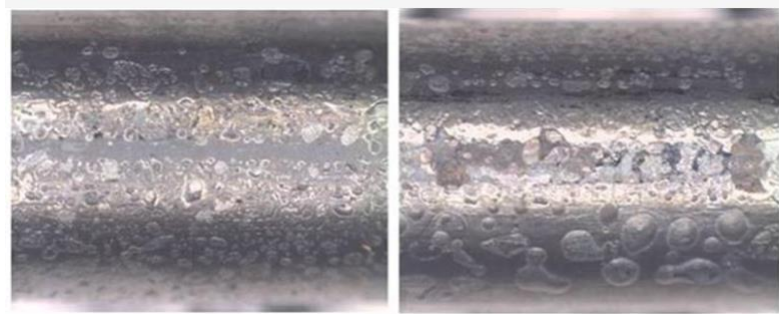
Criteria	Friction				3
Definition:	Friction is the deformation generated by the physical deformation of the wire rod.				
Basis of assessment	The Wire Rod received in our warehouses will be free from deformation due to friction.				
Photos or diagrams	1) example: Friction 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	No friction	Presence of friction
FM	***	***	0	Accepted	Refused

Criteria	Deformation				4
Definition:	Wire deformation is the deformation generated by the physical deformation of the wire rod following an impact.				
Basis of assessment	The Wire Rod received in our warehouses will not be deformed by impact.				
Photos or diagrams	1) Example: deformation with forks of a forklift truck 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	Absence of deformation	Presence of deformation
FM	***	***	0	Accepted	Refused

Criteria	Winding defect _ traverse winding				5
Definition:	The winding fault is an anomaly that occurs during coil formation or during compaction.				
Basis of assessment	The Wire Rod received in our shop will be free from any winding defect known as cross-winding.				
Photos or diagrams	1) example: winding fault 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	No winding default	Presence on winding default
FM	***	***	0	Accepted	Refused

Criteria	Crossed loops				6
Definition:	The cross-winding defect is linked to the manufacturing process on the supplier's side.				
Basis of assessment	The Wire Rod received in our warehouses will be free of crossed loops.				
Photos or diagrams	1) Example: Crossed loops 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	Absence of Crossed Loops	Presence of Crossed Loops
FM	***	***	0	Accepted	Refused

Criteria	Cut coils				7
Definition:	The defect in the cut loops is linked to the manufacturing process on the supplier's side.				
Basis of assessment	Wire rod received in our warehouses will not be cut in the coil				
Photos or diagrams	1) Example: Cut Loops 				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	Absence of Cut Loops	Presence of Cut Loops
FM	***	***	0	Accepted	Refused

Criteria	Defect of pustule scale (blisters)				8
Definition:	The defect of pustule scale (blisters) is linked to the manufacturing process on the supplier's side.				
Basis of assessment	The Wire Rod must be clean of pustule scale (blisters)				
Photos or diagrams	1) Example: pustule scale (blisters)  				
Scope	SPECIFICATION			ORIENTATION	
	Lt	Target	Ut	Absence of blisters	Presence of blisters
FM	***	***	0	Accepted	Refused