MATERIAL SPECIFICATION FOR INCOLOY 625 (UNS N06625)SOLUTION ANNEALED CONDITION

Rev	Reason of change	Date	Made By	Reviewed By	Approved By	Status
0		09-08-2010	USR	J Gulati	KKD	Release
1	Documentation requirements amended	20-10-2011	USR	J Gulati	KKD	Release
2	Chemical/ Mechanical properties amended as per UNS N06625 & ASTM B446.	03-01-2018	M N	AS	KKD	Release
3	Quenching media temperature requirements amended & retention period added in clause 7.3 added as per API 6A 21st edition.	24-09-2019	MN	USR	AS	Released

1.0 PURPOSE

1.1 It is the purpose of this material specification to list in concise form of the material requirement for INCOLOY 625 (UNS N06625).

1.2 This material specification is intended to aid the purchasing department in procuring and the vendor in supplying a material which meets the needs of its intended use, and the quality control department in the inspection and release of incoming material.

2.0 REQUIREMENTS

2.1 The requirements of specification SES 26-590, SES 26-740 & SES 26-744 shall apply in addition to the following specific requirements.

2.2 It is the responsibility of raw material/metal supplier/machined parts supplier of carbon, low alloy and martensitic stainless steel to have practices and procedures in place to assure that raw materials/parts delivered to FMC do not have excessive amounts of residual magnetism. Excessive residual magnetism is defined as greater than 3 gauss. Residual magnetism can occur due to factors such as lifting with magnets, magnetic particle inspection or stray welding current. The supplier's procedures/testing methods will be subject to verification during supplier audits.

2.3 The raw material supplier shall assure that FMC does not receive material with greater than background level of radioactivity.

3.0 Chemical composition: Chemical composition limits are listed below.

Elements	Wt. Percentage (%)
Nickel[1]	58.0 Minimum
Chromium	20.0 - 23.0
Iron	5.0
Molybdenum	8.0 - 10.0
Cb + Ta	3.15 - 4.15
Carbon	0.10
Manganese	0.50
Silicon	0.50
Phosphorus	0.015
Sulfur	0.015
Aluminum	0.40
Titanium	0.40
Cobalt (reporting not required)	1.0
[1]Element may be determined arithmetically by difference.	

4.0 Mechanical Properties: Mechanical property requirements are listed below. Each heat shall be tested and the listed mechanical properties shall be reported.

MECHANICAL PROPERTIES	RANGE
TENSILE STRENGTH, PSI	100,000 (690 MPa) Min.
YLELD STRENGTH, PSI	40,000 (276 MPa) Min.
ELONGATION IN 2"	30 % Min.
HARDNESS	95 HRB (209BHN) Max.

5.0 HEAT TREATMENT: -

PROCESS	ATMOSPHERE/MEDIA	TEMPERATURE	TIME AT TEMPERATURE
Annealing	Air	2000-2200 ºF (1094-1204 ºC)	½ hour per inch of maximum through Thickness. One hour minimum.
Note: Maximum holding time shall not exceed Five times (5X) the minimum holding time. In all case, holding time shall not start until parts or materials have reached specified heat treatment temperature. The 5X rule does not apply to the separate QTC (e.g. ER 5")			
Quenching	Water	The temperature of quenching medium shall not exceed 100 °F (38 °C) at the start of the quench nor exceed 49°C (120°F) at any time during the quench cycle.	

6.0 MARKING: Each Piece or component shall be identified with the heat number or traceability marked on the exterior with low stress dot stamps. When used for Ring Gaskets, each piece shall also be stamped with the designation "625-4".

7.0 DOCUMENTATION REQUIRED

7.1 Each shipment shall be accompanied by material certifications for each lot of material, certifications must be positively relatable to the lot of material represented.

7.2 Recheck of Chemical properties to be carried out by SARA SAE.

7.3 Suppliers shall retain heat treat charts in a secure area for a period of no less than 10 years (e.g. electronic or paper).