Industeel

ArcelorMittal

CryElso™ 7
Cryogenic steel

A cost efficient solution for large scale onshore cryogenic tanks

CryElso™ 7 is an alloyed steel grade containing 7% nickel intended for the fabrication of onshore large scale above ground storage tanks for Liquefied Natural Gas, Liquefied Ethylene Gas, Liquefied Ethane and other extra low temperature service equipment.

CryElso™ 7 provides similar tensile and toughness properties than ones of classical 9% nickel steel up to 38 mm thick sections.

CryElso™ 7 is can be used in lieu of 9% nickel as it has been specifically designed for that purpose. Design will be kept similar thanks to similar allowable stresses, and fabrication will also follow the same practices, in particular welding operations. **CryElso™ 7** can be used jointly with **CryElso™ 9Q.**

Properties

Standards

- ASTM A 553 Type III (UNS K61365)
- ASME SA 533 Type III Code Case 2842 of BPVC for use in ASME VIII Div. 1 and Div. 2
- API 620 Included in Annex Q

Tensile properties

Guaranteed transverse tensile properties at room temperature are *(Measured on every plates):*

Plates thickness (mm)	Yield Strength (MPa)	Ultimate Tensile Strength (MPa)	Minimum Elongation (%)
5 ≤ t ≤ 40	≥ 585	690 / 825	20

CVN Impact properties

Guaranteed transverse Charpy V-Notch impact properties properties *(Measured on every plates):*

Specimen size (mm)	Test temperature (°C)	Energy absorption (J)		Lat. expansion (mm)	Shear aspect (%)
		Average for a set min	One specimen min	Each specimen min	
10 x 10	-196	100	75	0.38	75
10 x 7.5		75	56		
10 x 5		50	38		

Chemical composition

Ladle analysis – Expressed in weight percent (wt%)

C	Mn	Si	P	S	Ni	Cu	Cr	Mo	Al	Nb	V
<0.06	0.30-0.80	<0.30	<0.005	<0.001	6.50-7.50	<0.10	<0.30	<0.30	>0.020	<0.030	<0.010

Welding

CryElso™ 7 can be welded with metals of types 625, C276 or other high-strength nickel base alloys using similar welding procedures and fillers than 9% Ni alloy. The following table overviews main consumables classification.

	SMAW	GMAW	FCAW	SAW (Wire + Flux)
AWS	SFA5.11: E NiCrMo-3 E NiCrMo-4 E NiCrMo-6	SFA 5.14: ER NiCrMo-3 ER NiCrMo-4	SFA 5.34: E NiCrMo-3 T1-4	SFA5.14: ER NiCrMo-3
EN	EN ISO 14172: E Ni 6625 E Ni 6276 E Ni 6620	EN ISO 14172: S Ni 6625 S Ni 6276	EN ISO 12153: T Ni 6625 P M21 2	EN ISO 14172: S Ni 6625 EN ISO 14174: S A AF2 5643 AC H5

Delivery conditions

Available sizes

Industeel proposes the following available sizes :

Thickness (mm)	Width (mm)	Max. Length (mm)
4.75 to 6.99	1200 to 2700 *(please consult for wider)*	4000 to 12000
7.00 to 7.99	1200 to 3400	4000 to 13000
8.00 to 8.99	1200 to 3600	
9.00 to 17.99	1200 to 3800 *(please consult for wider)*	
18.00 to 38.00		4000 to 16000

Prefabrication

By special agreement, prefabricated pieces can be delivered according to drawings. The following operations can be performed: beveling, bending, rolling of shell to radius, cutting to shape, fabrication of stiffeners and annular plates, pre-welding. *(Non exhaustive list, please consult)*

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