WUHAN ARCFORT WELDING CO., LTD

Evaluation reports

AK-52U : 3.2mm —— AWS A5.1

Welding consumables batch number：15410

Subject of evaluation	Welding material	Evaluation category	Performance Evaluation
Number of samples	5kg	Material Name	Welding Electrodes
Grades	AK-52U	Model	AWS A5.18 E7016
Welding consumables specifications	3.2mm	Welding consumables batch number	15410
Welding equipment	Aotai ZX7-400ST Welding Power Supplies	Testing equipment	CMT5605、ZBC2752-C、direct reading spectrometer
Performance Evaluation Project	Evaluation of the appearance quality of welding consumables, welding process performance and physical and chemical properties of the molten metal.		
Evaluation criteria	AWS A5.1 / A5.1M Standard for Carbon Steel Welding Rods for Electro-Arc Welding, GB/T 25776 Methods of Evaluation of Welding Process Properties of Welding Materials		
Comprehensive conclusions of the performance evaluation	Welding Technology Centre of China Petroleum and Natural Gas Pipeline Scientific Research Institute Co. A5.1/A5.1M Standard for Carbon Steel Welding Rods for Electric Arc Welding, GB/T25776 Standard for Evaluation Methods of Welding Performance of Welding Materials, the samples sent for inspection of the appearance quality, all-position welding process performance and the physical and chemical properties of the molten metal. Performance and physical and chemical properties of the molten metal evaluation. According to the results of the performance evaluation, it is determined that the batch no. 15410 AK-52U Φ3.2mm welding electrode has good appearance quality and good all-position welding process performance. The performance evaluation results are shown on the attached page.		

The following are annexed, data parameters.

Welding process performance:

Process parameters	Amps (A)	80-110
	Voltage (V)	21-26
	Welding speed (cm/min)	7-11
	Protective gas	——

CHEMICAL COMPOSITION OF ELECTRODES（%）

	C	Si	Mn	S	P	Ni	Cr	V	Mo	Al
Standard %	0.15	0.75	1.60	0.035	0.035	0.30	0.20	0.08	0.30	——
Value %	0.048	0.36	0.88	0.01	0.015	0.020	0.040	0.006	0.007	0.001
Note	Mn+Ni+Cr+V+Mo≤1.75									

Welding Basics：

preheating temperature （℃）	110	Interlayer temperature （℃）	110-120
Welding position	Flat welding position	Current type	DCEP
Welding current（A）	110-125	Welding Voltage （V）	22-26
Welding layers	7	Number of weld passes per layer	1-5 layers :2 6-7 layers :3
Protective Gases & Flow	——	Post-weld heat treatment	——

Ray detection：

Report No.	Implementing Standard	Quality Grade	Evaluation Conclusion
RT-20161601	AWS A5.1	——	OK

Tensile properties （ambient temperature）：

Specimen number		Tensile Strength（Mpa）	Yield Point（Mpa）	Elongation（%）
15410-T	Standard	≥490	≥400	≥22
	Value	580	490	25
Reach a verdict	OK			

Charpy- V Impact properties：

Specimen number	Test Temperature （℃）	Notch type	Specimen Size （mm）	Impact Absorption Function（J）	
——	——	——	——	value	average value
15410-C1	-30	V	10*10*55	83.5	77.5
15410-C2	-30	V	10*10*55	85.0	
15410-C3	-30	V	10*10*55	64.5	
Acceptance value	Average value ≥ 27J; allow and only allow a specimen impact absorption work is less than 27J but should not be less than 20J.				
Reach a verdict	OK				

NOTICE: The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements.

CAUTION: Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standards A49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJune Road, Miami, FL 33126: OSHA Safety and Health Standards 29 CRF 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210.