



## Welding Consumable: Approval Certificate

Office: **Mumbai-Port**

Date: **27 June 2019**

This Certificate is issued to Superon Schweisstechnik India Limited, India, to certify that the undernoted welding consumable is recommended for entry in the supplementary list of certified welding consumable in accordance with ASME Section II, Part C, SFA 5.1, specification of the year 2017. This certificate is issued on the basis of satisfactory test results on the test coupons prepared on 12 April 2019 and subsequently tested on 15 May 2019. Welding consumable is manufactured by Superon Schweisstechnik India Limited, IMT Manesar, India

### Description:

Consumable name : SUPER OPTIMAL 7018 H4R

Size : 2.4, 3.2, 4.0, 4.8, 5.0 mm

SFA Classification : AWS A / SFA 5.1:E7018 H4R

### Results of test :

	2.40 mm	3.20 mm	4.00 mm	4.80 mm	5.00 mm
0.2% Proof stress (N/mm <sup>2</sup> )	Not Required	Not Required	521.84	Not Required	512.31
UTS (N/mm <sup>2</sup> )	Not Required	Not Required	591.52	Not Required	589.31
% Elongation	Not Required	Not Required	30.78	Not Required	29.48
Impact at -30deg C (AVG)	Not Required	Not Required	158	Not Required	148.67
Chemical	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Radiography	Not Required	Not Required	Acceptable	Not Required	Acceptable
Fillet( H,V, OH )	Not Required	Not Required	Acceptable	Not Required	Acceptable
Moisture	Not Required	Not Required	Acceptable	Not Required	Not Required
Current Polarity	AC / DCEP	AC / DCEP	AC / DCEP	AC / DCEP	AC / DCEP

### Chemical Analysis- Size: 2.40 mm

	C	Mn	Si	S	P	Cr	Ni	Mo	V
	%	%	%	%	%	%	%	%	%
<b>Range</b>	<b>0.15 max.</b>	<b>1.60 max.</b>	<b>0.75 max.</b>	<b>0.035 max</b>	<b>0.035 max</b>	<b>0.20max</b>	<b>0.30max</b>	<b>0.30 max</b>	<b>0.08 max</b>
<b>Result</b>	<b>0.054</b>	<b>1.39</b>	<b>0.36</b>	<b>0.011</b>	<b>0.022</b>	<b>0.024</b>	<b>0.056</b>	<b>0.003</b>	<b>0.003</b>

### Chemical Analysis- Size: 3.20 mm

	C	Mn	Si	S	P	Cr	Ni	Mo	V
	%	%	%	%	%	%	%	%	%
<b>Range</b>	<b>0.15 max.</b>	<b>1.60 max.</b>	<b>0.75 max.</b>	<b>0.035 max</b>	<b>0.035 max</b>	<b>0.20max</b>	<b>0.30max</b>	<b>0.30 max</b>	<b>0.08 max</b>
<b>Result</b>	<b>0.054</b>	<b>1.39</b>	<b>0.34</b>	<b>0.011</b>	<b>0.025</b>	<b>0.026</b>	<b>0.040</b>	<b>0.003</b>	<b>0.003</b>

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**Chemical Analysis- Size: 4.00 mm**

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>S</b>	<b>P</b>	<b>Cr</b>	<b>Ni</b>	<b>Mo</b>	<b>V</b>
	%	%	%	%	%	%	%	%	%
<b>Range</b>	<b>0.15 max.</b>	<b>1.60 max.</b>	<b>0.75 max.</b>	<b>0.035 max</b>	<b>0.035 max</b>	<b>0.20max</b>	<b>0.30max</b>	<b>0.30 max</b>	<b>0.08 max</b>
<b>Result</b>	<b>0.05</b>	<b>1.35</b>	<b>0.36</b>	<b>0.010</b>	<b>0.024</b>	<b>0.022</b>	<b>0.051</b>	<b>0.003</b>	<b>0.003</b>

**Chemical Analysis- Size: 4.80 mm**

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>S</b>	<b>P</b>	<b>Cr</b>	<b>Ni</b>	<b>Mo</b>	<b>V</b>
	%	%	%	%	%	%	%	%	%
<b>Range</b>	<b>0.15 max.</b>	<b>1.60 max.</b>	<b>0.75 max.</b>	<b>0.035 max</b>	<b>0.035 max</b>	<b>0.20max</b>	<b>0.30max</b>	<b>0.30 max</b>	<b>0.08 max</b>
<b>Result</b>	<b>0.054</b>	<b>1.40</b>	<b>0.32</b>	<b>0.011</b>	<b>0.024</b>	<b>0.026</b>	<b>0.047</b>	<b>0.003</b>	<b>0.003</b>

**Chemical Analysis- Size: 5.00 mm**

	<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>S</b>	<b>P</b>	<b>Cr</b>	<b>Ni</b>	<b>Mo</b>	<b>V</b>
	%	%	%	%	%	%	%	%	%
<b>Range</b>	<b>0.15 max.</b>	<b>1.60 max.</b>	<b>0.75 max.</b>	<b>0.035 max</b>	<b>0.035 max</b>	<b>0.20max</b>	<b>0.30max</b>	<b>0.30 max</b>	<b>0.08 max</b>
<b>Result</b>	<b>0.052</b>	<b>1.39</b>	<b>0.30</b>	<b>0.010</b>	<b>0.024</b>	<b>0.027</b>	<b>0.052</b>	<b>0.003</b>	<b>0.003</b>

Refer Report No. N190418030-1/2 for radiography, results found satisfactory.

Refer Fillet test report No. 1/2 dated 15/05/2019 for fillet test and results found satisfactory.

Refer Determination of Diffusible Hydrogen Content report F/QA/IV/07/01.

Refer Moisture Content Test report F/QA/IV/32/00.

Certificate is valid until 18 May 2020.



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Surveyor to Lloyd's Register Asia

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