

CERTIFICATE OF QUALITY

Report No.: KR200-0028085

Date: May 8, 2018

Applicant : Helm AG
 Vessel : CHEMROAD JOURNEY
 Product : Dimethylformamide (DMF)
 Quantity : 1,115.231 M/Tons
 Port of Loading : Al-Jubail, Saudi Arabia
 Port of Discharge : Ulsan, South Korea
 Terminal :

Sample Source : SHORE TANK
 Laboratory Sample No. : LC18-05-1134

Items	Specification	Method	Results
Appearance	Clear liquid	Visual	Clear liquid
DMF Content, wt%	Min. 99.9		99.98
Color, Apha	Max. 10	ASTM D1209	3
Methanol, wt%	Max. 0.004		<0.004
Water, wt%	Max. 0.020	ASTM E203	0.011
Acidity (as Formic Acid), ppm	Max. 10	ASTM D1613	2
Alkalinity, wt ppm	Max. 10	ASTM D1614	<1
Fe, wt ppm	Max. 0.05	ASTM E394	0.02
pH-value(20% aq. sol 25°C)	6.5~8.5	ASTM D1293	7.1
Conductivity, µs/cm	Max. 2.0	ASTM D1125	0.3

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Ho Sung Suh

Signed by Ho Sung Suh
 Ulsan Branch Manager
 Intertek Kimsco Co., Ltd.

