

**ISO 22241-1 Quality Characteristics of DEF fluid**

LAB CODE: 3A1613UR1

CLIENT CODE: DEF 32.5%

RECEIVED DATE: 04/29/2013

ALT. CODE: LOT#0002

REPORT DATE: 5/1/2013

AR CODE: AP31402A

GRADE: N/A

REQUESTOR: PEDERSEN, R

REF NO.: N/A

CONDUCTED FOR: DEF Products  
422 East Barioni Blvd.  
Imperial, CA 92251

Test Completion Date	Characteristics	Unit	Limits		Results	Test methods
			min.	max.		
4/30/2013	Urea content	% (m/m)	31,8	33,2	<b>32.7</b>	ISO 22241-2 Annex B ISO 22241-2 Annex C
						<b>33.0</b> <b>32.4</b>
4/29/2013	Density at 20 °C	kg/m <sup>3</sup>	1 087,0	1 093,0	<b>1088.9</b>	ISO 12185
5/1/2013	Refractive index at 20 °C	—	1,381 4	1,384 3	<b>1.3824</b>	ISO 22241-2 Annex C
5/1/2013	Alkalinity as NH <sub>3</sub>	% (m/m)	—	0,2	<b>&lt;0.01</b>	ISO 22241-2 Annex D
4/30/2013	Biuret	% (m/m)	—	0,3	<b>0.12</b>	ISO 22241-2 Annex E
4/30/2013	Aldehydes	mg/kg	—	5	<b>3.4</b>	ISO 22241-2 Annex F
4/30/2013	Insoluble matter	mg/kg	—	20	<b>6.4</b>	ISO 22241-2 Annex G
5/1/2013	Phosphate (PO <sub>4</sub> )	mg/kg	—	0,5	<b>0.24</b>	ISO 22241-2 Annex H
5/1/2013	Calcium	mg/kg	—	0,5	<b>0.3</b>	ISO 22241-2 Annex I
5/1/2013	Iron	mg/kg	—	0,5	<b>&lt;0.1</b>	
5/1/2013	Copper	mg/kg	—	0,2	<b>&lt;0.1</b>	
5/1/2013	Zinc	mg/kg	—	0,2	<b>&lt;0.1</b>	
5/1/2013	Chromium	mg/kg	—	0,2	<b>&lt;0.1</b>	
5/1/2013	Nickel	mg/kg	—	0,2	<b>&lt;0.1</b>	
5/1/2013	Aluminum	mg/kg	—	0,5	<b>&lt;0.1</b>	
5/1/2013	Magnesium	mg/kg	—	0,5	<b>&lt;0.1</b>	
5/1/2013	Sodium	mg/kg	—	0,5	<b>&lt;0.1</b>	
5/1/2013	Potassium	mg/kg	—	0,5	<b>&lt;0.1</b>	
5/1/2013	Identity	—	identical to reference		<b>YES</b>	ISO 22241-2 Annex J

In my opinion, the testing on this report was conducted in a valid manner according to the test method listed.

Test results only apply to sample(s) provided. Samples are tested as received from the customer.

Test Deviations: Annex H - H.3.2, Incineration dish used is porcelain.

**Remarks:**

Joe Franklin  
Manager, Analytical Testing

3A1613UR1 DEF 32.5%

