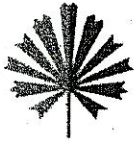


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**TFA**บริษัท ไทยฟัตตีแอลกอฮอล์ จำกัด
Thai Fatty Alcohols Co., Ltd.

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Visit our website: www.thaifatty.com

Certificate of Analysis

Product: ThaiOL 1698
Description: Cetyl Alcohol 98% min
Batch No: 2317050101
Tank No : 3200T007B
Lab Report No: LAR-C4-1705-00107
Tested Date: 02 May 2017

Characteristics	Analysis Method	Specification	Result
Appearance	Visual check	White solid or Pastilles	White Solid/Pastilles
Colour, APHA	In house Method Base on ISO 6271-1:2004 (E)	0- 10	6
Acid value, mg KOH/g	In house Method Base on ISO 660-1996	0- 0.1	0.01
Sap. value, mg KOH/g	In house Method Base on ISO 3657:2002 (E)	0- 0.5	0.4
Hydroxyl value, mg KOH/g	In house Method Base on ASTM E 1899-02	228-233	233
Iodine Value, g I ₂ /100g	ISO 3961-1996	0- 0.5	<0.04
Solidification Range, °C	ISO 3841-1997	47-50	49.4
Water content, %	ASTM E203-01	0- 0.3	0.023
Chain distribution, %	In house Method Base on Reference No.970059-0		
C14		0-2	0.06
C16		98-100	99.35
C18		0-2	0.08
Hydrocarbon, %	In house Method Base on Reference No.970059-0	0-0.5	0.05
Carbonyl Number, mg/kg	In house Method Base on Reference no.980144-01	150 max	60

We hereby verify the analysis of the sample as shown above.

Agornsri Thavornchan

Senior Technical Support Engineer (QA)

(This is a computer generated document and will not bear any signature)

Manufacturing Date: 01 May 2017

Expiry Date: 30 April 2019

The test values listed above were determined from selected, representative samples taken from the batch(es) to be delivered.

The above information only applies to material directly after production. It does not release the purchaser from conducting his own incoming inspection and does not release a guarantee of certain characteristics, or of the suitability of the product for a certain