IIC INTERNATIONAL INNOVATION CENTER
33 Soi Rama 2 Soi 54, Junction 4, Samaedam, Bangkhunthien
Bangkok 10150, Thailand, Tel: +66 (0) 28995070-1
www.iicinnovation.com

IN VITRO PHOTOSTABILITY TESTING OF SUNSCREEN COMPARED TO NATURAL SUNLIGHT

Job no: **PET26-770**
Rev: 0 Date: 29/04/2026

2. Area under the curve index (AUCI)

Area under the curve index (AUCI) of SPF according to the following equation

$$AUCI_{SPF} = \frac{AUC_{After(290-320\ nm.)}}{AUC_{before\ (290-320\ nm.)}}$$

where:
$AUC_{before\ (290\text{-}320\ nm.)}$: Area under the curve before UV exposure of SPF wavelenge (290-320 nm.)
$AUC_{after(290\text{-}320\ nm.)}$: Area under the curve after UV exporsure of SPF wavelenge (290-320 nm.)
If AUCI>0.8, the sunscreen was considered photostable.

Area under the curve index (AUCI) of UVAPF according to the following equation

$$AUCI_{UVAPF} = \frac{AUC_{after\ (320-400\ nm.)}}{AUC_{before\ (320-400\ nm.)}}$$

where:
$AUC_{before(320\text{-}400\ nm.)}$: Area under the curve before UV exposure of UVAPF wavelenge (320-400 nm.)
$AUC_{after(320\text{-}400\ nm.)}$: Area under the curve before UV exposure of UVAPF wavelenge (320-400 nm.)
If AUCI>0.8, the sunscreen was considered photostable.

PART D: RESULTS

Result and conclusion:

[ ] : Screening test (scan 1 plate)

[X] : Full test (scan 4 plates)

Table 2: SPF and UVAPF of Std. S2 (Lot no. 15/25) after UV irradiated

Test	Plate no.	Pre-irradiation UVAPF	C Coeff.	Irradiation dose (J/cm ^{2})	Exposure time (min)	Post-irradiation UVAPF
Std. S2 (Lot no. 15/25)	Plate 1	13.60	0.85	16.30	50:21	11.00
	Plate 2	13.30	0.79	15.90	49:13	10.90
	Plate 3	13.30	0.79	15.90	49:06	10.80
	Plate 4	13.30	0.77	16.00	49:26	10.90
					Average	**10.90**
					Standard dev.	**0.10**
					UVAPF COV	**16.35**
					Critical wavelengeth (nm)	**379.10**
					UVAPF 95% CI (% of mean)	**1.40**

Table 3: AUCI of product after UV irradiated for 3 hours

Test	Plate no.	SPF (290-320 nm.)		UVAPF (320-400 nm.)	
		AUC $_{before}$	AUC $_{after}$	AUC $_{before}$	AUC $_{after}$
3 hours in Q-sun of test product	Plate 1	37.45	58.96	57.15	53.98
	Plate 2	52.12	64.65	78.17	91.99
	Plate 3	53.08	64.53	79.48	92.04
	Plate 4	53.89	64.65	81.40	94.05
	AUCI	1.29		1.12	

Table 4: AUCI of product after UV irradiated for 6 hours

Test	Plate no.	SPF (290-320 nm.)		UVAPF (320-400 nm.)	
		AUC $_{before}$	AUC $_{after}$	AUC $_{before}$	AUC $_{after}$
6 hours in Q-sun of test product	Plate 1	37.45	58.72	57.15	83.55
	Plate 2	52.12	63.79	78.17	89.97
	Plate 3	53.08	64.20	79.48	90.80
	Plate 4	53.89	64.49	81.40	93.10
	AUCI	1.28		1.21	

INTERNATIONAL INNOVATION CENTER
33 Soi Rama 2 Soi 54, Junction 4, Samaedam, Bangkhunthien
Bangkok 10150, Thailand, Tel: +66 (0) 28995070-1
www.iicinnovation.com

IN VITRO PHOTOSTABILITY TESTING OF SUNSCREEN COMPARED TO NATURAL SUNLIGHT

Job no: **PET26-770**
Rev: 0 Date: 29/04/2026

Table 5: AUCI of product after UV irradiated for 10 hours

Test	Plate no.	SPF (290-320 nm.)		UVAPF (320-400 nm.)	
		AUC_{before}	AUC_{after}	AUC_{before}	AUC_{after}
10 hours in Q-sun of test product	Plate 1	37.45	57.74	57.15	79.99
	Plate 2	52.12	62.49	78.17	85.95
	Plate 3	53.08	62.74	79.48	87.01
	Plate 4	53.89	62.96	81.40	89.30
AUCI		1.25		1.16	

Conclusion:

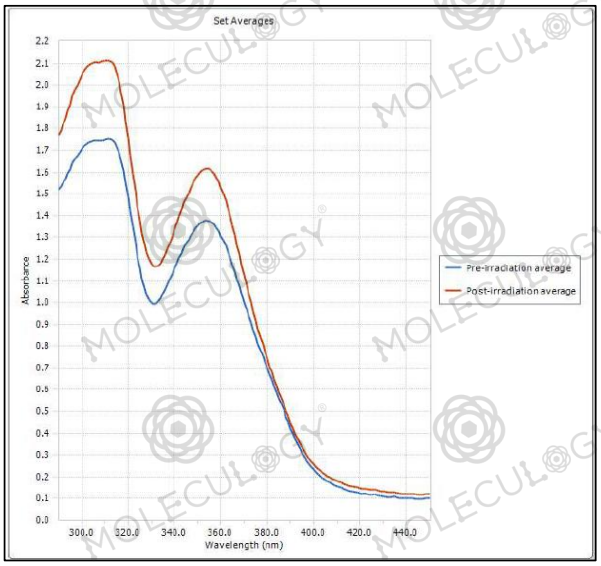
No.	UV irradiated time in Q-Sun	UV irradiated time in Natural light	AUCI (AUCI >0.8)	
			$AUCI_{spf}$	$AUCI_{UVAPF}$
1	3hrs	4hrs	1.29	1.12
2	6hrs	9hrs	1.28	1.21
3	10hrs	14hrs	1.25	1.16

The test sample description, ***Moleculogy Starter Sunscreen SPF50+ PA++++ (Formula code : SLTTH00263R02SAI, Lot no. : 26A002)*** provided AUCI of SPF (290-320 nm.) region and AUCI of UVAPF (320-400 nm.) region greater than 0.8 after exporsure to simulated sunlight for 10 hours; thus the photostability of this product to natural sunlight for 14 hours was expected.

Khemika S.
Analyzer: **Khemika Sakkunee**
Technician - Product Efficacy Test
Date: 29/04/2026

Kunthida.
Reviewer: **Kunthida Taisakun**
Scientist – Product Efficacy Test
Date: 29/04/2026

Approver: **Krissanapol Hattiya**
Technical Support Manager
Date: 29/04/2026

PART E: GRAPH PICTURE

I.Absorbance graph of after UV irradiated for 3 hours