

# Accelerated weathering test (Q-UV) of KURARITY™ with weather stabilizers

KURARITY business promotion dept.  
Elastomer Division

# Q-UV test condition

## Q-UV test

Lamp: UV-340, 0.60W/m<sup>2</sup>

Detector: Q-Lab CR10 radiometer ( $\lambda=340\text{nm}$ )

Conditions: UV irradiation (60deg.C, 8hr) and following water spraying (50deg.C, 4hr)

Total testing time: 168hr (14 cycles)

Sample: Injection molded sample (75mm x 100mm x 3mm)

KURARITY™ LA4285 with or without UV-A

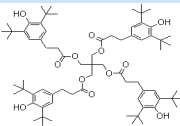
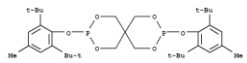
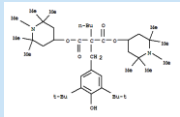
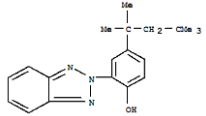
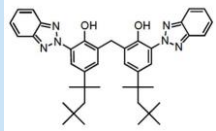
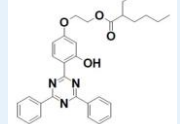
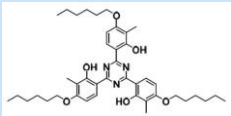
## Test method

Measurement: transmittance, haze and color phase

Appearance of the sample after 168hr Q-UV test (Bleeding or not)



# Studied weather stabilizers

	Evaluated material	Equivalent material	Amount [phr]	CAS No.	Structure
Antioxidant Hindered phenol type	ADKSTAB™ AO-60 (ADEKA)	Irganox® 1010 (BASF)	0.1	6683-19-8	
Antioxidant Phosphates type	ADKSTAB™ PEP-36 (ADEKA)	NA	0.1	80693-00-1	
HALS	TINUVIN® 144 (BASF)		0.2	63843-89-0	
UVA	VIOSORB™ 583 (KYODO CHEMICAL)	TINUVIN® 329 (BASF)	0.2	3147-75-9	
	ADKSTAB™ LA-31 RG (ADEKA)	TINUVIN® 360 (BASF)	0.2-1.0	103597-45-1	
	ADKSTAB™ LA-46 (ADEKA)	(NA)	0.2-0.5	371146-04-2	
	ADKSTAB™ LA-70F (ADEKA)	(NA)	0.2-1.0	222529-65-9	

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 \*ADKSTAB is a registered trademark of ADEKA Corporation  
 \*VIOSORB is a registered trademark of Kyodo Chemical Co., Ltd.

# Example formulation / Q-UV irradiation test

Material	Ent.1	Ent.2	Ent.3	Ent.4	Ent.5	Ent.6	Ent.7	Ent.8	Ent.9	Ent.10	Ent.11
KURARITY™ LA4285	100	100	100	100	100	100	100	100	100	100	100
ADKSTAB™ AO-60		0.1	0.1	0.1		0.1	0.1		0.1	0.1	
ADKSTAB™ PEP-36		0.1	0.1	0.1		0.1	0.1		0.1	0.1	
TINUVIN® 144		0.2	0.2	0.2		0.2	0.2		0.2	0.2	
VIOSORB™ 583		0.2									
ADKSTAB™ LA-31 RG			0.2	1.0	1.0						
ADKSTAB™ LA-46						0.2	0.5	0.5			
ADKSTAB™ LA-F70									0.2	0.5	0.5
Properties (Values before / after 168hr test)											
Transmittance	92.3 / 92.2	92.8 / 93.0	92.9 / 92.8	92.7 / 92.9	92.6 / 92.6	92.7 / 93.0	92.7 / 93.0	92.2 / 92.8	92.6 / 92.8	92.4 / 90.7	92.2 / 86.2
Haze	1.5 / 1.8	1.1 / 1.5	1.0 / 1.3	1.1 / 0.9	0.9 / 1.6	1.0 / 1.5	1.3 / 1.8	1.2 / 1.5	0.7 / 1.4	1.4 / 5.5	1.5 / 17
b*	0.7 / 2.7	1.1 / 1.1	1.8 / 1.2	2.4 / 1.7	2.9 / 2.3	0.7 / 0.7	1.1 / 1.0	1.4 / 1.5	3.0 / 2.9	5.8 / 6.2	7.4 / 9.0
Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Bleed out	Bleed out	Bleed out

- ✓ After the 168 hr Q-UV test, the specimen were fogged on Ent.9 to 11 because of bleeding out.
- ✓ Ent.2 and Ent.6 showed better initial color phase and lower color shift in this evaluation.

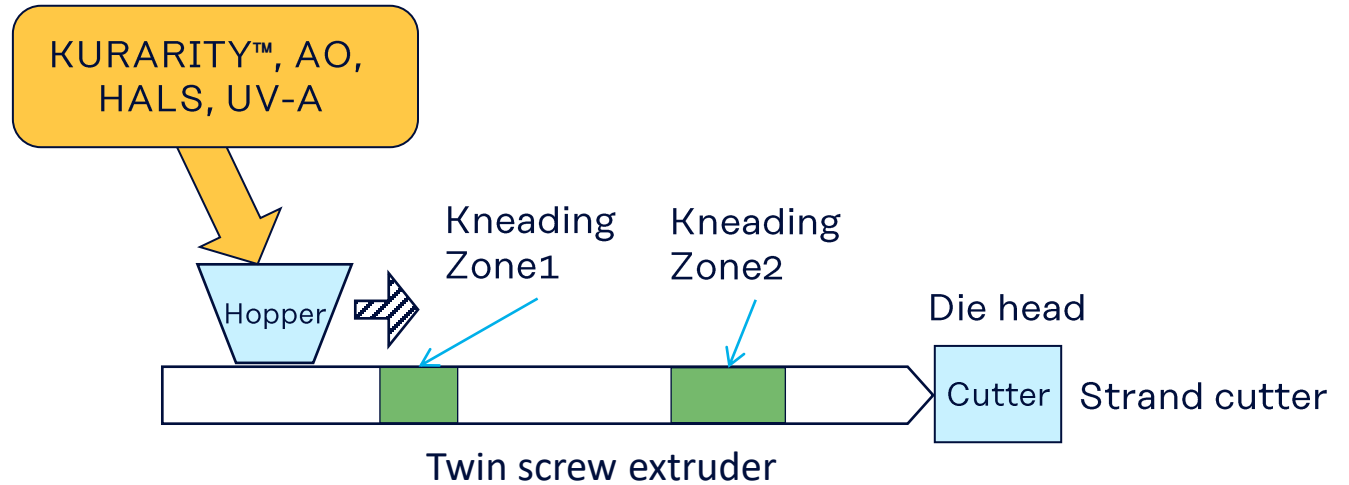
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 \*VIOSORB is a registered trademark of Kyodo Chemical Co., Ltd.

# Test compounding conditions (Ent.1 ~ Ent.11)

Equipment example

Twin extruder: ZSK 25 (Coperion)

Screw:  $\phi$  25 mm, L/D=54



Temperature [deg.C]	C2 (hopper)	C3~C11	C12	Die head
		50	210-230	200-220
Screw rotation [rpm]	200			
Vent	Pull			
PCW temperature [deg.C]	30-50			

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Precautions should be taken in handling and storage. Please refer to the appropriate Safety Data Sheet for further safety information. In using KURARITY™, please confirm related laws and regulations, and examine its safety and suitability for the application.

For medical, health care and food contact applications, please contact your Kuraray representative for specific recommendations. Even so, users must conduct their own assessment, revisions, registrations as well rely in their own technical and legal judgment to establish the safety and efficacy of their compound and/or end product with KURARITY™ for any application KURARITY™ should not be used in any devices or materials intended for implantation in the human body. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement.

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