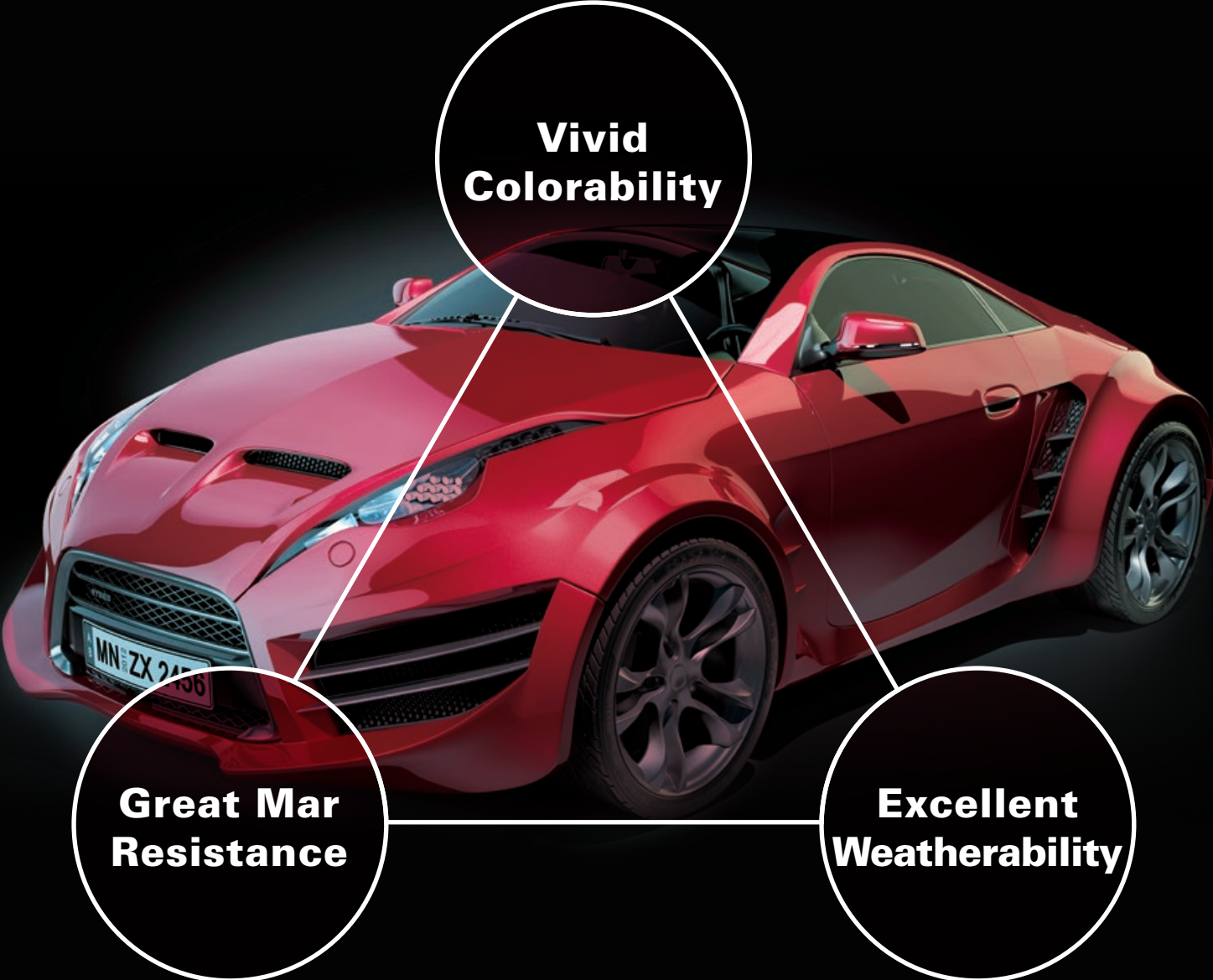


**Techno-UMG**

# **VIVILLOY**



**Vivid  
Colorability**

**Great Mar  
Resistance**

**Excellent  
Weatherability**

# Developed from years of ASA expertise, VIVIL

## Vivid Colorability

Unique ASA alloy allows customers to produce mold-in-color and eliminate the painting process

Provides paint-free exterior parts with significant cost reduction

### Typical Applications



Radiator Grille



Door Mirror Cover



Spoiler

## Great Mar Resistance

Superior mar resistance due to our proprietary PMMA alloy

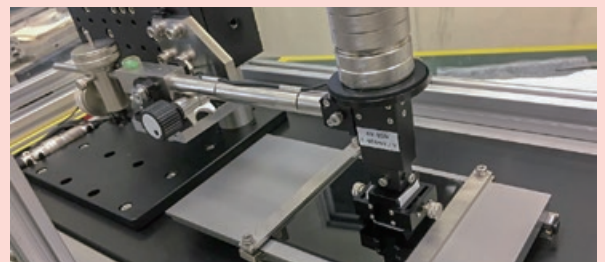
Excellent scratch resistance

### Scratch Resistance Test (against soft fabrics)

	$\Delta L$ (25°)	Specimen enlarged image (x30)	Dynamic friction coefficient
<b>VIVILLOY VA090</b>	<b>0.3</b>		<b>0.25</b>
<b>VIVILLOY VA110</b>	<b>1.1</b>		<b>0.44</b>
PMMA	2.6		0.60
ASA	4.5		0.65

#### Test conditions

Test apparatus: Tribogear TYPE-38 made by SHINTO Scientific  
 Friction element: Kanakin No.3 (20x20mm)  
 Test speed: 100mm/s  
 Load: 4.9N (500 g)  
 Number of reciprocations: 5 times  
 Determination method: Judged by  $\Delta L$  (polygonal colorimeter 25°)



In-house Scratch Resistance Test Facility

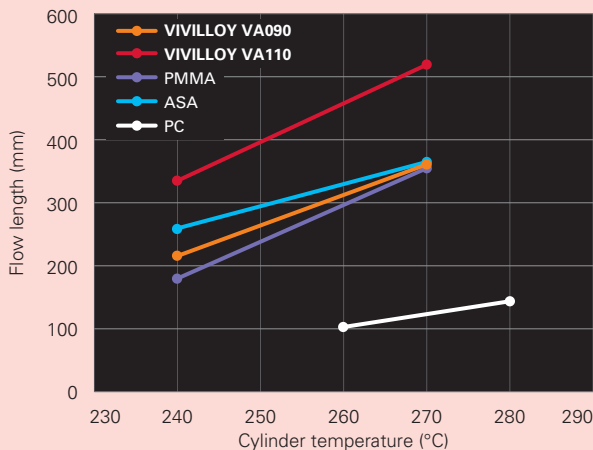
# VIVILLOY exhibits the following key characteristics

## Easy Moldability

High flow characteristics enable molding of parts of various shapes and sizes

Provides more design flexibility for exterior parts

### Spiral Flow (Sample Thickness 2mm)



### Higher potential for molding complex parts



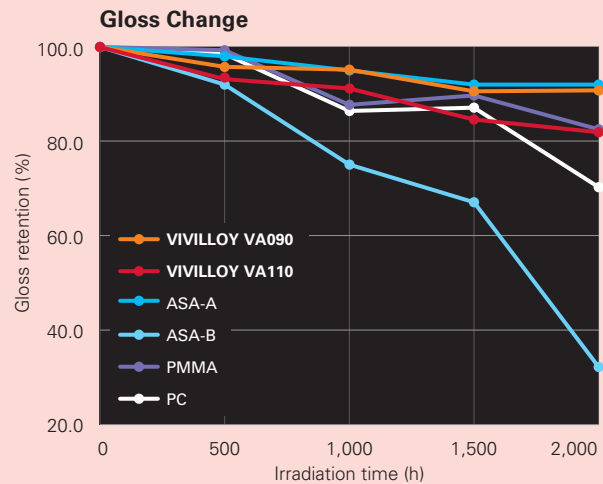
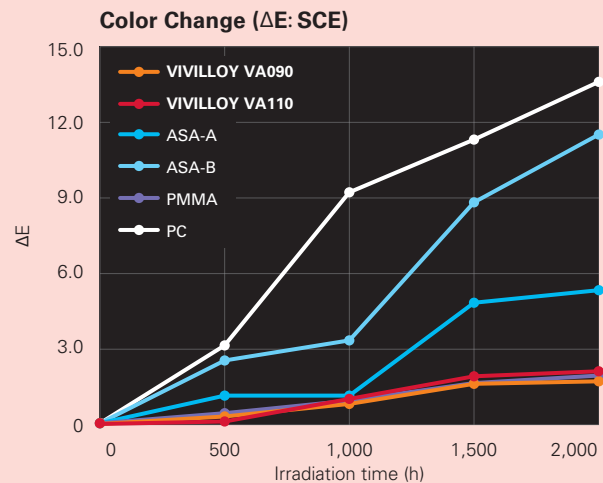
Radiator Grille

## Excellent Weatherability

Best-in-class weatherability due to our proprietary PMMA alloy and specialized polymerization technology

High gloss and vivid color retention

### UV Weathering Test



#### Test conditions

Test apparatus: SWOM S80HB made by Suga Test Instruments  
Rain cycle: 120min/18min  
Irradiance: 255W/m<sup>2</sup> (300nm to 700nm)  
Sample: Mirror surface (black color)

# Physical Properties

Item	Test method	Condition	Unit	VIVILLOY		Heat resistant ASA
				VA090	VA110	
Charpy Impact Strength (Notched)	ISO 179	23°C	kJ/m <sup>2</sup>	<b>12</b>	<b>8</b>	12
Tensile Strength	ISO 527	23°C, 50mm/min	MPa	<b>45</b>	<b>50</b>	51
Flexural Modulus	ISO 178	23°C, 2mm/min	MPa	<b>2,100</b>	<b>2,300</b>	2,500
Flexural Strength				<b>65</b>	<b>75</b>	77
Rockwell Hardness	ISO 2039	23°C	R-Scale	<b>106</b>	<b>113</b>	107
TDUL	ISO 75	1.80MPa	°C	<b>77</b>	<b>78</b>	87
Melt Volume Rate	ISO 1133	230°C, 10kg	cm <sup>3</sup> /10min	<b>6</b>	<b>5</b>	4
Specific Gravity	ISO 1183	23°C	g/cm <sup>3</sup>	<b>1.13</b>	<b>1.14</b>	1.08
Pencil Hardness	JIS K5600-5-4	23°C	—	<b>HB</b>	<b>F</b>	2B
Falling Ball Impact	Ball Weight: 500g Test Pieces: 100mm×100mm×3mm thickness	23°C	cm (Non-Break Height)	<b>240&lt;</b>	<b>240&lt;</b>	240<
		-30°C		<b>130</b>	<b>70</b>	240
Flow Length	[Spiral Flow Test Condition] Machine: JSW J85AD-110H Mold: 15mm width×2mm thickness Mold Temperature: 60°C Injection Pressure: 98MPa	Cylinder Temperature 240°C	mm	<b>215</b>	<b>335</b>	259

## Notice

You can obtain and use the Material Safety Data Sheet (SDS) from our SALES DEPARTMENT.

Information described on these sheets was obtained based on specific conditions and thus Techno-UMG Co., Ltd. will not guarantee that you can always obtain the name results as described here from the use of our product.

Also, Techno-UMG Co., Ltd. is unable to guarantee the quality and safety of your products manufactured by using our products or any information proposed by our company. Your company by itself has to judge the suitability of the materials to your products.

Also pay full attention to legal restrictions and industrial properties.