

# DVP Color 簡介及使用說明

DVP Color 是由顏料 (Pigment), 樹脂(Resin), 分散劑(Dispersant)...等, 經過特殊研磨分散工程, 將有機顏料或無機顏料與樹脂結合而得之粒狀或片狀顏料。其優點為 DVP Color 本身無味, 無污染性且便於儲存運送, 使用只要以一般酮類及芳香族等有機溶劑, 加以溶解即可, 而無一般液狀油墨之缺陷。一般液狀油墨如長期儲存時, 容易發生沈澱分離色變及溶劑發揮, 如使用DVP Color則無此缺陷。

DVP Color 溶解成油墨後, 主要用途是PVC膠膜, 膠布之表面印刷, 其特點為具有高光澤, 高鮮明度, 高密著性及耐移行性, 耐磨擦之優點。茲就本公司DVP Color基本色逐一介紹如後:

## 1. 黃色系列 (Yellow Series)

### (A) 無機顏料

DVP Yellow 5506: 色相檸檬黃味

DVP Yellow 114: 色相中黃

為鉻黃(Chrome yellow)製品, 其主要成分為鉻黃(Chrome Yellow), 均為含鉛顏料, 印刷製品遇硫(S)容易變黑, 因此在印刷選用上, 應考慮下游加工用途。鉻黃製品具有明亮, 高遮蓋力之優點, 故仍為業者普遍採用。鉻黃因比重較大(5-6)的關係, 在低黏度時易生沈澱, 且因其含鉛, 有毒性應避免使用在食品包裝之印刷上。

### (B) 有機顏料

DVP Yellow 113 : 色相檸檬黃味, 鮮艷度佳。

DVP Yellow 183A: 色相紅黃, 鮮艷度佳, 透明。

DVP Yellow 9Z133: 色相紅黃, 鮮艷度佳, 物性佳。

(a) 113、183A兩種色料, 屬雙偶氮(Disazo Yellow)產品, 著色力強、透明、無毒。

(b) 9Z133屬苯并咪唑酮(Benzimidazolone)產品, 著色力強、物性佳、無毒。

(c) 因比重小, 故於低黏度時不會沈澱, 假使使用無機色料有沈澱之困擾時, 建議改用有機顏料。

## 2. 橙色系列 (Orange Series)

### (A) 無機顏料

DVP Orange 141: 屬紅味之橙色。其成份為鉬紅(Molybdate Orange)含鉛, 耐硫性差。

### (B) 有機顏料

DVP Red 580 : 屬黃味之橙色。屬單偶氮(Monoazo)產品, 著色力強、無毒。

## 3. 紅色系列 (Red Series)

PAINE Pink 9A095	屬螢光桃紅。
DVP Red 482	色相藍味。耐熱, 耐光優。
DVP Red 9Z175	色相黃味。耐熱, 耐光優。
DVP Red 483	色相黃味。
DVP Red 9Z113	色相黃味。
DVP Red 87K	色相藍味。
DVP Red 9Z125C	色相黃味。耐熱, 耐光優。
DVP Red 5300A	色相黃味。耐熱, 耐光優。
DVP Red 583	色相藍味。
DVP Red 9Z119	色相藍味。耐熱, 耐光優。

(a) PAINE Pink 9A095屬螢光色, 其耐候、耐熱較差。優點為色澤艷麗, 故不要求物性或室內用品上。普遍備採用。

(b) 483、9Z113、87K、583屬通用級之紅色系列, 在不要求高物性下, 可採用但應避免少量及淺色使用。

(c) 482、9Z175、9Z125C、5300A、9Z119為高級之紅色系列, 其物性相當優秀, 且色彩鮮艷又富光澤, 在粉紅、淺色印刷或低著色量時建議採用。

## 4. 棕色系列 (Brown Series)

DVP Brown 587: 色相黃味。

(a) 屬鍛燒氧化鐵(Fe<sub>2</sub>O<sub>3</sub>)之產品, 耐熱, 耐候均佳, 唯光澤度中等。

(b) DVP Brown 587, 因比重較大, 其液狀油墨, 靜置數日後會微有沈澱, 但因其色相普受歡迎, 故仍被大量採用。

## 5. 紫色系列 (Violet Series)

DVP Violet 154、9Z189為高級合成顏料製成, 其耐光、耐熱、光澤均優, 唯耐溶劑稍差, 故高著色量使用, 宜注意其移行性。

## 6. 藍色系列 (Blue Series)

藍色系列主要顏料酞花青藍(Phthalocyanine Blue), DVP Blue 131之流動性及物性(耐熱、耐候)均優。

## 7. 綠色系列 (Green Series)

DVP Green 32: 色相 黃味。

DVP Green 882: 色相 藍味。

Green 為 Phthalocyanine Green 製造, 其性質和 Phthalocyanine Blue 相當, 耐熱, 耐候皆佳。

## 8. 白色系列 (White Series)

DVP White 887 採用R型品之二氧化鈦(TiO<sub>2</sub>)製造, 白度光澤佳。

## 9. 黑色系列 (Black Series)

DVP Black 85H 以高級碳黑(Carbon Black)製造, 具有極佳之流動性, 黑度、光澤均優。

# SUMMARY INTRODUCTION OF DVP COLOR

DVP Color is made of pigment, resin, dispersant, etc. The organic or inorganic pigment is mixed with resin to produce DVP color in granule and slice form by mean of special grinding and dispersion process. The advantages of DVP color are as following: smell-less, no pollution, and easy for shipment and storage. When using it, just dissolve it in ketone and aromatic solvents. After a long period of time, the liquid ink is usually easy to create precipitation, separation, discoloring and solvent volatilization. Using DVP Color, all such disadvantages can be overcome. After DVP color dissolved into ink, it is usually used for printing on PVC film and PVC leather. Its special features are high gloss, high brightness, high adhesion, high resistance to migration and friction, etc. Below is the summary introduction of the DVP Color promoted by our company:

<p>1. Yellow Series:</p> <p>(A) Inorganic Color:</p> <p>(1) DVP Yellow 5506: Hue is citrine yellow.</p> <p>(2) DVP Yellow 114: Hue is medium yellow.</p> <p>The above two are all chrome yellow products, all are lead-contained pigments. As the printed matters are easy to turn black when they meet with sulfur(S), therefore, when used for printing, attention should be paid to down stream reprocess. As the chrome yellow products have the advantages of brightness, high hiding power, it is still widely used by the traders. Due to high specific gravity, the chrome yellow is easy to create precipitation when it is in low viscosity form. Also, as it contains lead, is poisonous, it is recommended that chrome yellow must not be used for printing on food packages.</p> <p>(B) Organic Color:</p> <p>DVP Yellow 113: Hue is citrine yellow with good brightness.</p> <p>DVP Yellow 183A: Hue is reddish yellow with good brightness and transparent.</p> <p>DVP Yellow 9Z133: Hue is reddish with good brightness, transparent.</p> <p>(a) "113" and "183A" are of Disazo Yellow products with strong ability for Color application, transparency and nonpoisonous.</p> <p>(b) DVP Yellow 9Z133 is Benzimidazolone Product with strong ability for Color application, transparency and nonpoisonous.</p> <p>(c) Due to low specific gravity, it can not create precipitation in low viscosity form. If there is any trouble in use of inorganic color, it is recommended that organic color should be used.</p> <p>2. Orange Series:</p> <p>(A) Inorganic Color:</p> <p>DVP Orange 141: Redish orange. Molybdate orange, it contains lead and has poor resistance to sulfur.</p> <p>(B) Organic Color:</p> <p>DVP Red 580 : Yellowish orange. It is Monoazo Product with strong ability for color application and nonpoisonous.</p> <p>3. Red Series:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">PAINE Pink 9A095</td> <td>Hue is fluorescent pink color</td> </tr> <tr> <td>DVP Red 482</td> <td>Hue is bluish, excellent resistance to heat and light.</td> </tr> <tr> <td>DVP Red 9Z175</td> <td>Hue is Yellowish, excellent resistance to heat and light.</td> </tr> <tr> <td>DVP Red 483</td> <td>Hue is Yellowish.</td> </tr> <tr> <td>DVP Red 9Z113</td> <td>Hue is Yellowish.</td> </tr> <tr> <td>DVP Red 87K</td> <td>Hue is bluish.</td> </tr> <tr> <td>DVP Red 9Z125C</td> <td>Hue is Yellowish, excellent resistance to heat and light.</td> </tr> <tr> <td>DVP Red 5300A</td> <td>Hue is Yellowish, excellent resistance to heat and light.</td> </tr> <tr> <td>DVP Red 583</td> <td>Hue is bluish.</td> </tr> <tr> <td>DVP Red 9Z119</td> <td>Hue is bluish, excellent resistance to heat and light.</td> </tr> </table> <p>(a) PAINE pink 9A095 is a fluorescent color with weather and heat resistance slightly inferior to common use class red series. Its advantage is brightness. Therefore, if the heat resistance is not demanded or it is for the indoor items, it still can be widely used.</p> <p>(b) The above 483、9Z113、87K、583 are the common-use class red series. If the high physical property is not demanded, it can be used, but inhibit to use in small amount and tinting color.</p> <p>(c) The above 482、9Z175、9Z125C、5300A、9Z119 are of high class red series. Its physical property is excellent. Also, its color is bright with gloss. It is recommended for pink and tinting color printing or low color application.</p>	PAINE Pink 9A095	Hue is fluorescent pink color	DVP Red 482	Hue is bluish, excellent resistance to heat and light.	DVP Red 9Z175	Hue is Yellowish, excellent resistance to heat and light.	DVP Red 483	Hue is Yellowish.	DVP Red 9Z113	Hue is Yellowish.	DVP Red 87K	Hue is bluish.	DVP Red 9Z125C	Hue is Yellowish, excellent resistance to heat and light.	DVP Red 5300A	Hue is Yellowish, excellent resistance to heat and light.	DVP Red 583	Hue is bluish.	DVP Red 9Z119	Hue is bluish, excellent resistance to heat and light.	<p>4. Brown Series:</p> <p>DVP Brown 587 : Hue is yellowish</p> <p>(a)DVP Brown 587 is made of Fe<sub>2</sub>O<sub>3</sub> Products with excellent resistance to heat and weather. However, their gloss is medium.</p> <p>(b)DVP Brown 587: Due to high specific gravity, its liquefied ink will be precipitated after storage for a couple days. However, due to its hue is popular, it is still widely used.</p> <p>5. Violet Series:</p> <p>DVP Violet 154 and DVP Violet 9Z189 are made of high class synthetic pigment with superior resistance to light and heat and with excellent gloss. However, its resistance to solvent is poor. Therefore, when it is used for high color application, attention should be paid to its migration.</p> <p>6. Blue Series:</p> <p>Blue series is made chiefly from phthalocyanine blue pigments. DVP Blue 131's flow ability and physical property (resistance to heat and weather) are excellent.</p> <p>7. Green Series:</p> <p>DVP Green 32: Hue is yellowish</p> <p>DVP Green 882: Hue is bluish</p> <p>Green is made of phthalocyanine green with its property corresponding to that of phthalocyanine blue and with excellent resistance to weather and heat.</p> <p>8. White Series:</p> <p>DVP White 887 is made of R-type TiO<sub>2</sub>. Its white gloss is excellent.</p> <p>9. Black Series:</p> <p>DVP Black 85H is made of high class carbon black. Its flowabilty, blackness and gloss are all excellent.</p>
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# TECHNICAL INFORMATION

## I. DVP Color Series : Pigment Preparation for PVC Printing

The DVP is soluble in organic solvent, and very easy to handle due to its dry appearance and non-staining characters.

The recommended recipe to dissolve the DVP color Solution is as follows.

DVP Color	Formula 1 (General PVC Film)		Formula 2 (Overlay for Rigid PVC Film)		
	Chip	Solvent	Chip	Medium	Solvent
YL 5506	25	75	25	10	65
YL 114	25	75	25	10	65
YL 113	15	85	13	20	67
YL 183A	12	88	12	20	68
YL 9Z133	15	85	13	20	67
OR 141	30	70	25	10	65
RD 580	15	85	13	20	67
PAINE Pink 9A095	10	90	10	10	80
RD 482	15	85	13	20	67
RD 9Z175	18	82	15	10	75
RD 483	15	85	13	20	67
RD 9Z113	15	85	13	20	67
RD 87K	15	85	13	20	67
RD 9Z125C	15	85	13	20	67
RD 5300A	15	85	13	20	67
RD 583	15	85	13	20	67
RD 9Z119	15	85	13	20	67
VL 154	10	90	10	10	80
VL 9Z189	10	90	10	10	80
BR 587	30	70	25	10	65
BL 131	15	85	13	10	77
GN 32	15	85	13	10	77
GN 882	15	85	13	10	77
WH 887	25	75	25	20	55
BK 85H	15	85	13	10	77
Medium → VPI White 8C248(Suggestion)					
Solvent → MEK : Cyclohexanone = 87 : 13(Suggestion)					

## II. How to dissolve

Stirring the mixed solvent shown above with low speed (200rpm) thoroughly, then DVP chips are poured slowly. When DVP Chips are added completely, adjusting the stirring rate to 600~1000rpm, continue to stir for 40~60minutes.

### III. Test Method

#### 1. Color Shade (Hue)

Enclosed the formulated solution above for 1 hour mixing, drop Standard solution and Test solution on the white or transparent sheet, the distance between these 2 solutions must be about 1.5cm, then spread these solution by using K hand coater (or K control coater) No.2 or No.3. Compare the specimen and standard.

#### 2. Viscosity

Using the formulation for the color shade, enclosed and agitated for 1hour, then take out, to check the viscosity by using BM-TYPE Viscosity meter. The operating condition is using #2 Pin rotating at 60rpm for 1minute, to check the temperature of the solution.

Note: Unit of viscosity: cP (centipoise) or Second (Using Zahn cup #3)

#### 3. Blocking

The test solution printed on the white or transparent sheet to put under the room temperature for 30minutes, cut to 5cm×5cm in size, at the same time, to cut the white sheet for 5cm×5.5cm in size, laminated these 2 pieces of test sample face to face between two glass plates, loaded by 120gr/cm<sup>2</sup>, then, remove into the Gear Oven at the temperature of 50°C for 5 hours, observed the state of Blocking assessed on 1-to-5 scale.

#### 4. Crocking Resistance

Printing the test solution on the white sheet, white chips were printed on black sheet to put in the room temperature for 24 hours, then, cut to 2.5cm×28cm in size, placed on the Crock meter and rubbed 25 times against a dry white cotton fabric at a pressure of 0.9kg/cm<sup>2</sup>. Marking off on the cotton was evaluated on 1-to-5 scale.

Rating	Staining of cotton	Crocking Resistance
5	No staining	Very good
4	Trance	Good
3	Weak	Fairly good
2	Appreciable	Moderate
1	Heavy	Poor

#### 5. Heat Resistance

Test solution printed on the white or transparent sheet were left in an air circulating oven for 20minutes at 180°C±2°C, The change of shade is assessed on a 1-to-5 scale.

Rating	Shade of test samples	Heat Resistance
5	Unchanged	Very good
4	Trance changed	Good
3	Slightly changed	Fairly good
2	Considerably changed	Moderate
1	Severely changed	Poor

#### 6. Light Fastness

The printed sheet is carried out of a specified in a Fade-O-Meter. Assessments were made using the 1-to-8 Blue Scale as to the degree of their fading and discoloration.

Blue Scale Light Fastness

Rating	Blue Scale	Fade-O-Meter Full Exposure
8	Outstanding	400 hours
7	Excellent	200 hours
6	Very good	100 hours
5	Good	50 hours
4	Fair	25 hours
3	Moderate	12 hours
2	Poor	6 hours
1	Very poor	3 hours

# PVC 膠布印刷用色砂產品目錄

## Catalog of DVP Color

PVC Full Printed	Color Name Pigment No.	Light Fastness	Heat Resistance	Blocking Resistance	Crocking Resistance	Chemical Resistance		
						3N HCL	10% NaOH	10% Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>
	DVP Yellow 5506 PY-34	8	5	4	4	4	3	1
	DVP Yellow 114 PY-34	8	5	4	4	4	3	1
	DVP Yellow 113 PY-81	7	4-5	4	5	5	5	5
	DVP Yellow 183A PY-83	7	5	4	5	5	5	5
	DVP Yellow 9Z133 PY-181	8	5	5	5	5	5	5
	DVP Orange 141 PR-104	7	5	4	4	4	3	1
	DVP Red 580 PO-38	8	5	5	5	5	5	5
	Paine Pink 9A095 PR-173	3	3	4	3	4	4	4
	DVP Red 482 PR-122	7	4-5	5	4	5	5	5
	DVP Red 9Z175 PV-19	8	5	5	4-5	5	5	5

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Tah Kong Chemical Industrial Corp. R&D Department

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PVC Full Printed	Color Name Pigment No.	Light Fastness	Heat Resistance	Blocking Resistance	Crocking Resistance	Chemical Resistance		
						3N HCL	10% NaOH	10% Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>
	DVP Red 483 PR-48:3	5	3	4	3	5	4	5
	DVP Red 9Z113 PR-48:1	5-6	4	4-5	3	5	3-4	5
	DVP Red 87K PR-48:2	5	3	4	3	5	3	5
	DVP Red 9Z125C PR-221	7	4-5	4	4	5	5	5
	DVP Red 5300A PR-221	7	4-5	4	4	5	5	5
	DVP Red 583 PR-57:1	5	3	4	3	5	3-4	5
	DVP Red 9Z119 PR-122	7-8	5	5	5	5	5	5
	DVP Violet 154 PV-23	7	5	4	4	5	5	5
	DVP Violet 9Z189 PV-23	7	5	4	4	5	5	5
	DVP Brown 587 PR-101	8	5	5	5	5	5	5

# PVC 膠布印刷用色砂產品目錄

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PVC Full Printed	Color Name Pigment No.	Light Fastness	Heat Resistance	Blocking Resistance	Crocking Resistance	Chemical Resistance		
						3N HCL	10% NaOH	10% Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>
	DVP Blue 131 PB-15:3	8	5	5	5	5	5	5
	DVP Green 32 PG-7	8	5	5	5	5	5	5
	DVP Green 882 PG-7	8	5	5	5	5	5	5
	DVP White 887 PW-6	7	4	5	4	5	5	5
	DVP Black 85H PBk-7	8	5	5	5	5	5	5

以上所列物性數據為典型試驗數據，不做產品規格及保證。尤其著色量低於 0.1%時客戶必須自行測試所需物性。

The above data and results are based on controlled or lab work and must be confirmed by Buyer by testing for the intended conditions of use.