

[トップ \(TOP\)](#) [メール](#) [Photo BBS](#) [メイン映像掲示板](#) [観覧会掲示板](#) [ブログ \(熊本空港\)](#)

## Naval Aeronautic Headquarter

### Color identification Standard for Naval airplane –Temporary Specification No.117 Additional Volume

By Ryoichi Watanabe  
Translated by Mangkhut

#### Preface

Imperial Japanese Naval Air Force which had used imported at the beginning produced naval airplanes domestically for the first time in 1921. At that time, those were biplanes made by woods and clothes, after then as the technology was improved, the biplane changed to the monoplane and wooden planes changed to metallic them gradually. The materials used in an airframe changed from woods and clothes to metals, at the same time the paints for airplanes changed from dope to paints for light-metal. Benzyl cellulose paints named "T-T metal paints" was developed in 1930. As the paint's weight was light and had good adhesiveness and oil proof, the Navy adopted from May 1931. (Army Aeronautic Headquarter adopted them as the formal light metallic paints for airplanes in 1930.) After that, the paints for airplane such as alkyd resin, lacquer and polyurethane coating, have advanced.

#### Standard of paints

To this day, not apply only to airplane, paints has many standards. Their applications and colorings have many variations.

Some readers reading this paper may imagine that color chart "FS-595" is representative in color samples, however, you must know that "FS-595" is uncommon in Japan.

"FS-595" means 595<sup>th</sup> standard in Federal Specification and Standards, which is not international specification. So to speak, it is only domestic specification in US, and there are many other specifications with color names and numbers. ML Specification and ANA157 (Army-Navy Aeronautical Bulletin) are common. It is natural that there are similar specifications and standards in other countries such as BS-381(Great Britain), RAL (Germany), AS-2700 (Australia), in a similar way, JIS (Japanese Industrial Standards) and JPMA (Japan Paint Manufactures Association) decide color names and color numbers etc in Japan.

#### Color of airplane

Mainly, the color of Imperial Japanese Navy's airplane is fully silver-colored at the beginning. When they were painted in camouflage, there had been painted all body of airplanes in gray color, in some cases, the upper side was painted in dark green color and the lower side in camouflaged dark brownish color etc.

How was the color decided? What specifications were there? And what other colors were there? The answer is described in "Temporary Specification No.117 Additional Volume".

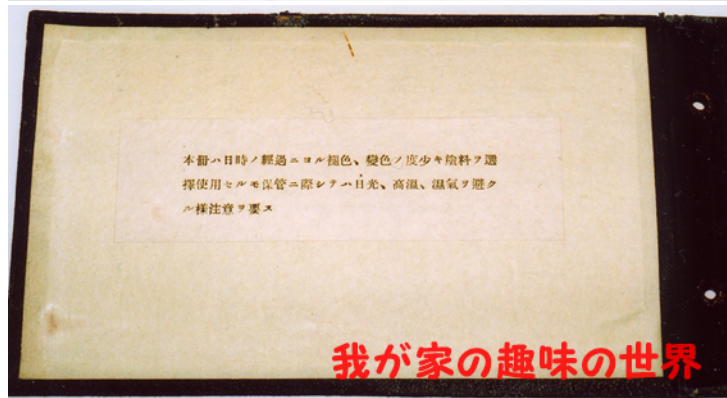
As this specification, which is not perfect, was discovered and I could clarify the whole picture, let me introduce this. I think the publication of "Temporary Specification No.117" is the first time in postwar days.



[26NOV1938 Naval Aeronautic Headquarter No.8010 formulation](#)

[10APR1942 Naval Aeronautic Headquarter No.2943 revision](#)  
[Temporary Specification No.117 Additional Volume](#)

[Color identification Standard for Naval airplane](#)  
[Naval Aeronautic Headquarter](#)



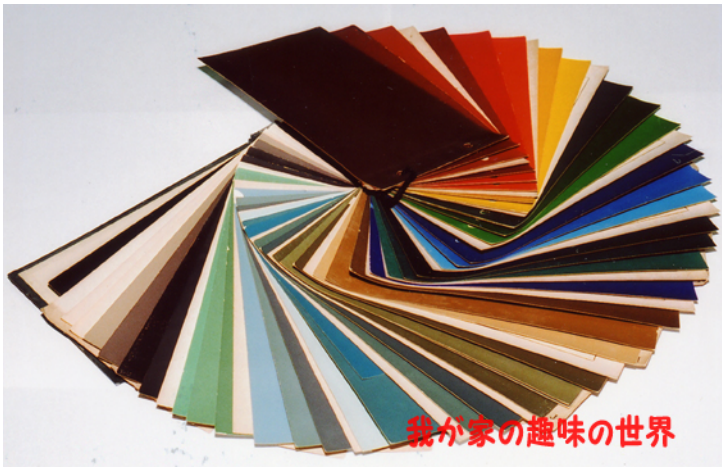
[Left photo](#)

[This is a front cover of Temporary Specification No.117 Additional Volume](#)

#### What is Temporary Specification No.117 Additional Volume?

Imperial Japanese Naval Aeronautic Headquarter was decided the standard colors for painting airplanes on 26<sup>th</sup> November in 1938. The color specification decided at that time is Temporary Specification No.117 Additional Volume. Somebody can see the papers gave descriptions of D1 and J2 etc about the painting color of zero fighters. I imagine that these numbers may originate from Temporary Specification No.117 Additional Volume.

Until now we have guessed the color from a portion of color numbers in the documents, which was published already, but by this discovery, we can understand the systematic assignment of color number and colorings.



Above photo

These are color chips in Temporary Specification No.117 Additional Volume, shown in fan-like fashion. From below the top, color number A1, and subsequent numbers set out in numeric order.

The content

The color card, which I confirmed, is described in "10<sup>th</sup> APRIL 1942 revised by Naval Aeronautic Headquarter", 206 mm wide by 114 mm length. The two sides of this card are black, and there are total 42 colors divided by standard codes in this color code.

Originally this card may have total 54 colors, but some colors could lose in long history. However we can know that Temporary Specification No.117 set down total 54 colors, and is divided into 17 series from A to Q.

Note

As this color code went on more than 60 years, we must think of discoloration under aging phenomena. However as this was not exposed to the sun, and stored with caution, this is in good preservation.

In the second place, it is difficult to write down "What kind of color is the color?", and I could not find the right color in other documents.

I got the color card "Japanese traditional colors", "Chinese traditional colors" and "French traditional colors", and found some near colors in these books at supply stores, but it is difficult to explain the color tones by written down color names in them.

If you know airplanes in world war two or some Japanese colors, you can imagine the color tone to some extent. And I think it is difficult to express the color by written down, and the reason comes from the culture of the coloring language too. A typical example is traffic signal in the town. We say "blue signal", but it is green in fact (recently blue signals have increased.). If we say blue signal, we can communicate each other from habitual practice of Japanese language. "Blue" is explained as "kusa-iro (grass green color)", and "green" is explained as "koi-aiiro (indigo blue)" in Kojirin dictionary.

How is the color?

The color will be explained by later mentioned "Approximate Color Reference Table" and the color code based on "Standard Color Code for Paints" published by Corp. JPMA (Japan Paint Manufactures Association). It is difficult to imagine by only codes and numbers, and so I will explain the color by introducing unique color names (Japanese name), custom names and custom colors.

N.B.

In context, RLM\*\* indicates the color codes which is according to Luftwaffe Specification of painting L.Dv.521. ANA\*\*\* is according to US Army and Navy Aeronautic Specification of painting No.166.

航空機用塗料色標準第1表ノ通り定ム  
第1表

標準符號	塗色名	種類	標準符號	塗色名	種類
A	褐 色	4	K	灰 青 色	4
B	赤 色	4	L	鼠 色	3
C	黄 色	4	M	灰 綠 色	4
D	綠 色	6	N	小 豆 色	4
E	青 色	4	O	白 色	1
F	藍 色	3	P	銀 色	1
G	藍 色	1	Q	黒 色	1
H	茶 色	4			
I	土 色	3			
J	灰 色	3			

我が家の趣味の世界

Painting Color Standard is established in Table 1

Table 1

CODE	COLOR NAME	CODE	COLOR NAME
A	BARK	K	COPENHAGEN BLUE
B	RED	L	GRAY
C	YELLOW	M	SAGE GREEN
D	GREEN	N	RUSSET
E	GLUE	O	WHITE

F	INDIGO BLUE	P	SILVER
G	AMETHYST	Q	BLACK
H	BROWN		
I	SOIL COLOR		
J	ASH COLOR		

Above photo

Table 1 is a list of content. Color names are limited, as you can see. Naturally there is no amber color or tatami straw color as the color name.



Above photo

These color codes printed in black color at the upper right on color chips.

Right photo is from "Temporary Specification No.117 Additional Volume", and left photo is from "Standard Color Code for Paints"

**Details**

**A. Bark**

I confirmed 3 in 4 colors.  
 "A1" means dark brown, and looks like blackish chocolate.  
 "A2" looks like color of the mixture of A1 and red, or is similar to mahogany red.  
 "A4" is more reddish brown than Bengal red or it looks like black tea.

**B. Red**

I confirmed 3 in 4 colors.  
 "B1" is called "garnet" or similar to reddish brown according to "revised subject-book of color by Nippon Shikiken Jigyo Co., Ltd."  
 "B3" is bright red color or is similar to vermilion of color pencil.  
 "B4" is similar to the color of Japanese persimmon or burnt orange.

**C. Yellow**

I confirmed 2 in 4 colors.  
 "C2" is so called Mars-yellow or bright yellow. I could not identify  
 "C1" and "C3", which I can guess them as the color used in wing leading edge ID strips color.  
 "C4" is similar to bright dandelion color, or the image color of Seibu Loft.

**D. Green**

I confirmed 4 in 6 colors. D, M and N sequences begin from number  
 "0". "D0" looks like dark gray mixed green, which is near to grayish green RLM74 of camouflage color for Luftwaffe.  
 "D1" is similar to dark greenish gray rather than green, and it looks like field gray painted on Germany army vehicles.  
 "D3" looks like dark green, which is similar to summer green leaves. The subject-book of color referred to above introduces  
 "D3" as bottle green (English), vert bouteille (French) or chitosemidori (Japanese).  
 "D5" looks like dark green, which is similar to green of color pencil.

**E. Blue**

I confirmed 3 in 4 colors.  
 "E1" is navy blue similar to ink color.  
 "E2" is mixture of gray and bluish purple, which is difficult to express.  
 "E3" looks like grayish blue, but is grayer than azubue (ANA609) painted on spitfire fighter plane, and it is darker than Sony's Image Color.

**F. Indigo blue**

I confirmed 2 in 3 colors.  
 "F1" is dark blue, and little more blue than sea blue; US Navy's camouflage color (ANA606).  
 "F2" is named as iron color according to JIS custom name, and looks like bluish green, so called GOSU, or the color of indigo blue pigment.  
 "F3" is blue green, which is similar to green which is used as RIHGA ROYAL HOTEL's image color.

**G. Amethyst**

This G sequence is only dark blue, which is similar to the official color of England Royal Family or Kobayashi Pharmaceutical Company's image color.

**H. brown**

I confirmed 3 in 4 colors.  
 "H1" is similar to dark-earth color painted on the airplane of Royal Air Force.  
 "H3" is brighter than dark-earth, which is similar to Luftwaffe's sand yellow at the north-Africa battle line.  
 "H4" is beige brightened middle stone used Royal Air Force planes, or similar to Italian sand yellow of Italian Air Force airplanes at north-Africa battle line.

**I. Soil color**

I confirmed all 3 colors.  
 "I1" is similar to olive drab (ANA613) painted on US Army airplanes. Both  
 "I2" and "I3" are dirt color, however I2 is darker than I3. This I3 was used on the Zero fighter's airframe as second coat. Sometimes this I3 is misunderstood as amber color. For your information, amber color is similar to the color of candy suckers molded on a griddle (dark orange color), on the other hand, amber color is

different from this color.

#### J. Ash color

I confirmed 2 in 3 colors.

"J1" is dark gray, and brighter than blackish gray (RLM66) in an airplane of Luftwaffe.

"J2" is introduced as bluish gray in The Report of Naval Aeronautic Headquarter or Kuugihou 0266. But the color chip, which I saw, looks like greenish gray.

Unfortunately, I could not confirm

"J3" which everyone wants to know.

#### K. Copenhagen blue

I confirmed 3 in 4 colors.

"K1" is so called grayish blue, which is similar to so called indigo gray.

"K2" is darker than gray, which is near to US navy's camouflage color: intermediate blue (ANA608).

"K4" is brighter ash green, and darker greenish than the lower surface color of Imperial Japanese Army and Naval airplane.

#### L. Gray

I confirmed all 3 colors.

"L1" is dark brownish ash color, and it looks like umber color with ash color.

"L2" is ash color with little yellow, which is darker than convert gray.

"L3" is bright ash color painted on the lower surface of Imperial Japanese airplane.

#### M. Sage green

I confirmed 3 in 4 colors.

"M0" is ash green literally, and it looks like dried green medical leaves.

"M2" is darker green than "M0", and it looks like celadon with green.

"M3" is light green, and it looks like the mixture of green of artists' colors and little ash color.

#### N . RUSSET

I confirmed all 4 colors.

"N0" is kurochairo (Japanese) or blackish brown, that is to say chocolate brown.

Generally speaking, "N1" is dark brown.

"N2" is chocolate brown in some milk.

I wonder if 'N3' can be included in this group,

because it is only little more thinner than color vote number "H4".

O. White

P. Silver

Q. Black

As these 3 colors are not necessary to explain, I will omit.

#### Review

"Kuugihou 0266 (The study of camouflage of Zero fighter), as you know, may be the most famous document about the painting of Imperial Japanese Naval Air Force.

Naturally, we know the printed color tone has changed, however I will compare this published color code with Color identification Standard for Naval airplane – Temporary Specification No.117 Additional Volume.

As I mentioned before, the color sample is not perfect, and so I compared a part of them. Let me review this content.

I could compare D1 with D2. I will explain D1 first. D1 is described as dark greenish black in "Kuugihou0266", and it looks like dark green painted Zero Fighters etc. On the other hand, it is described as field gray in Temporary Specification No.117 Additional Volume. J2 is described as bluish ash color in "Kuugihou0266", and it looks like the same, on the contrary, is described as dark green added to ash color in Temporary Specification No.117 Additional Volume. Seeing those colors, it is difficult to understand those differences even for considering change in color or allochromism and color degradation,

Considering these differences, can we say that color code which was adopted in "Kuugihou0266" is according to the specification of paints except Temporary Specification No.117 Additional Volume?

We may assume the color code in "Kuugihou0266" as Temporary Specification No.117 Additional Volume's color code, but the word "Temporary Specification No.117 Additional Volume" is never described in "Kuugihou0266". Or "Temporary Specification" is of a temporary nature, and so it is no wonder that there was "Formal Specification" separately.

Actually, "Japan Aircraft Standard Code No.8606 Paints for aircraft Color Code" was published from Aero Industry Society 2<sup>nd</sup> Chemical Industry Association 6<sup>th</sup> Section on 5<sup>th</sup> February in 1945, which is not divided into Army and Navy. At that time, this color code was not used in "Kuugihou0266" (published in 1942). Is this color code different from "Temporary Specification No.117 Additional Volume"?

I wrote down the paper about paints of Imperial Japanese Naval Air Force.

I hope you find it informative.

Remarks

This "Temporary Specification No.117 Additional Volume" is stored with caution by a big painting company named A company, and they agreed to release this to the public.

I could make up APPROXIMATE REFERENCE COLOR TABLE in cooperation with a manager in A company.

For your information, if readers of this paper have any questions, A company may refuse to answer.

#### REFERENCES

Revised Subject-book of Color by Nippon Shikiken Jigyo Co., Ltd, 1988

"Standard Color Code for Paints" published by Corp. JPMA (Japan Paint Manufactures Association) revision B, 2003

Federal Standard 595B, 1989

· Federal Standard Colors (1989)  
 MONOGRAM · THE OFFICIAL MONOGRAM USNAVY & MARINE CORPS AIRCRAFT COLOR vol.2 (1989)  
 · "THE OFFICIAL MONOGRAM PAINTING GUIDE TO GERMAN AIRCRAFT 1935-1945" (1980)  
 IMPS · COLOR CROSS-REFERENCE GUIDE (1988)  
 REKISHI GUNZOU Vol.33 · ZERO FIGHTER 2 (2001)  
 ETC.??\*SHUUNEN NO AYUMI, A company (NFS)

COLOR IDENTIFICATION STANDARD for NAVAL AIRPLANE –TEMPORARY SPECIFICATION No.117 ADDITIONAL VOLUME

APPROXIMATE COLOR REFERENCE TABLE

TEMPORARY SPECIFICATION No.117			APPROXIMATE COLOR			REMARKS	
CODE	COLOR NAME	COLOR No.	JPMA No.	FS595b	SUBJECT-BOOK of COLOR		
A	BARK	A <sub>1</sub>	B09-20D	10049	63		
		A <sub>2</sub>	B07-30L	10076	-		
		A <sub>3</sub>					MISSING
		A <sub>4</sub>	B09-40L	20109	-		
B	RED	B <sub>1</sub>	-	30160	27		
		B <sub>2</sub>				MISSING	
		B <sub>3</sub>	B05-50V	21400	21		
		B <sub>4</sub>	B09-50T	22203	-		
C	YELLOW	C <sub>1</sub>				MISSING	
		C <sub>2</sub>	B17-70X	13432	-		
		C <sub>3</sub>					MISSING
		C <sub>4</sub>	B22-80V	13655	75		
D	GREEN	D <sub>0</sub>	-	26081	-		
		D <sub>1</sub>	-	16081	217		
		D <sub>2</sub>					MISSING
		D <sub>3</sub>	-	24108	124		
		D <sub>4</sub>					MISSING
		D <sub>5</sub>	-	14110	117		
E	GLUE	E <sub>1</sub>	B75-20L	15048	154		
		E <sub>2</sub>	B77-40L	-	-		
		E <sub>3</sub>	B72-50L	-	-		
		E <sub>4</sub>					MISSING
F	INDIGO BLUE	F <sub>1</sub>	-	25045	-		
		F <sub>2</sub>	-	-	125		
		F <sub>3</sub>	-	(24108)	-	bluer than 24108	
G	AMETHYST	G <sub>1</sub>	B77-30T	-	155		
		H <sub>1</sub>	B19-40D	20095	-		
		H <sub>2</sub>					MISSING
		H <sub>3</sub>	B17-50F	10219	-		
H	BROWN	H <sub>4</sub>	B19-60H	-	-		
		I <sub>1</sub>	B25-40D	-	-		
		I <sub>2</sub>	B22-50D	-	-		
I	SOIL COLOR	I <sub>3</sub>	B22-60D	20318	-		
		J <sub>1</sub>	BN-40 or B75-40B	36118	-		
		J <sub>2</sub>	B45-40B	34159	-		
J	ASH COLOR	J <sub>3</sub>				MISSING	
		K <sub>1</sub>	-	25109	166		
		K <sub>2</sub>	B69-50D	-	-		
K	COPENHAGEN BLUE	K <sub>3</sub>				MISSING	
		K <sub>4</sub>	B45-70B	-	-		
		L <sub>1</sub>	B15-40B	30097	219		
		L <sub>2</sub>	B25-50B	16350	-		
L	GRAY	L <sub>3</sub>	B65-60B	-	-		
		M <sub>0</sub>	B37-50D	34226	-		
		M <sub>1</sub>					MISSING
M	SAGE GREEN	M <sub>2</sub>	-	34227	-		
		M <sub>3</sub>	B42-50L	-	-		
		N <sub>0</sub>	-	20045	63		
		N <sub>1</sub>	B15-30B	10045	62		
N	RUSSET	N <sub>2</sub>	B15-40D	20140	-		
		N <sub>3</sub>	B19-60F	-	-		
		O <sub>1</sub>	BN-93	17925	201		
		P <sub>1</sub>	-	17178	-		
O	WHITE	Q <sub>1</sub>	BN-10	17038	220		
P	SILVER						
Q	BLACK						

## REMARKS:

This reference table is quoted from the documents as below:  
"Standard Color Code for Paints" published by Corp. JPMA (Japan Paint Manufactures Association) revision B, 2003

Federal Standard 595B, 1989

Revised Subject-book of Color by Nippon Shikiken Jigyo Co., Ltd, 1988

January 1, 2005 public presentation. Renewal of the January, 2006 English-language edition.