

# METALLICS

VOL.



# XTREME METAL

23 ULTRA HIGH QUALITY METALLIC COLORS



The best metallic paints ever made, ultra high quality fine metallic pigments. Colors:  
AK471 Black Base \* AK472 Gold \* AK473 Copper \* AK474 Bronze \* AK475 Brass \* AK476 Steel  
AK477 Chrome \* AK478 White Aluminium \* AK479 Aluminium \* AK480 Dark Aluminium  
AK481 Polished Aluminium \* AK482 Duraluminium \* AK483 Gun Metal \* AK484 Burnt Metal  
AK485 Pale Burnt Metal \* AK486 Jet Exhausts \* AK487 Metallic Blue \* AK669 Titanium  
AK670 Stainless Steel \* AK671 Smoke Metallic \* AK672 Pale Brass \* AK673 Metallic Green  
AK674 Metallic Purple \* AK470 Xtreme Cleaner

# TRUE METAL WAX BASED METALLICS



www.ak-interactive.com  
Phone: (+34) 941 44 52 28  
info@ak-interactive.com



YouTube





**We are proud to launch this new volume of the AK Learning Series. This time deal with a subject very important for all kind of modelers in each discipline: finish in metal.**

**Figures, car ,planes , scifi, parts of any type of AFVs and other vehicles, we have tried to show all techniques and notions for get autehntic metallic aparence in our models**

**Some of the best modelers arround the world in each field will show us techniques to achieve the best results.**

**Fernando Vallejo**  
*AK Interactive President*

Original Idea, Design Supervision: **Fernando Vallejo**

Cover Design: **John kozelek**

Publisher: **AK Interactive**

Editor: **Fernando Vallejo**

Concept Development and Project Manager: **Pedro Larrañaga**

Layout: **BMS**

English Texts: **Sven Klasson.**

English Corrections: **Michael Devine.**

Depósito Legal: **LR-1085-2015**

Credits:

Roberto Ramirez

Tomás de la fuente

Daniel Zamarbide

Oscar Cofrade

Fernando Vallejo

Itsvan Michalko

Rubén González

Special thanks to:

Valentín Pérez Caballero

### **Printed in Logroño**

(c) 2015 AK Interactive. All right reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, actual or future, including photocopy, recording or any information storage or retrieval system, without permission in writing from the publishers.

# INDEX

<b>4</b>	<b>1. INTRODUCTION</b>	36	<b>4.3. PAINTING METALLICS</b>
6	1.1. THE COLOUR	36	4.3.1. AIRCRAFT ALUMINIUM MIRAGE IIC
7	1.2. PAINT COLOURS	44	4.3.2. P-51D ENAMEL PAINTING (TAMIYA + ALCLAD)
8	1.3. METAL COLOURS	52	<b>4.4. INKS ON METALS</b>
<b>10</b>	<b>2. PAINT TYPES</b>	60	<b>4.5. BARE METAL</b>
10	2.1. ACRYLICS	66	<b>4.6 GRAPHITE PENCILS</b>
11	2.2. ENAMELS, LACQUERS & PAINTS	67	<b>4.7. METALLIZED COLOUR PAINTS</b>
<b>14</b>	<b>3. MAIN METALS IN MODELLING</b>	68	4.7.1. YAMAHA TZ250
14	3.1. IRON	74	4.7.2. CAR GALLERY
15	3.2. STEEL	76	<b>4.8. PAINTING CHROME</b>
16	3.3. ALUMINIUM		4.8.1. T2 HK-AERIAL
17	3.4. COPPER		4.8.2. PAINTING CHROME CLIPS
18	3.5. BRONZE	82	<b>4.9. SHIP PROPELLER</b>
19	3.6. BRASS		
20	3.7. TITANIUM		
21	3.8. CHROME		
21	3.9. SILVER		
21	3.10. GOLD		
<b>22</b>	<b>4. TECHNIQUES &amp; SAMPLES</b>		
28	4.1. WAX PAINTING		
30	4.1.1. GERMAN MP40 GUN METAL		
32	4.1.2. OTHER WAX EXAMPLES		
33	4.2. PAINTING WITH PIGMENTS		
34	4.2.1. TOWING CABLE		

# INTRODUCTION

Imitating metallic effects.

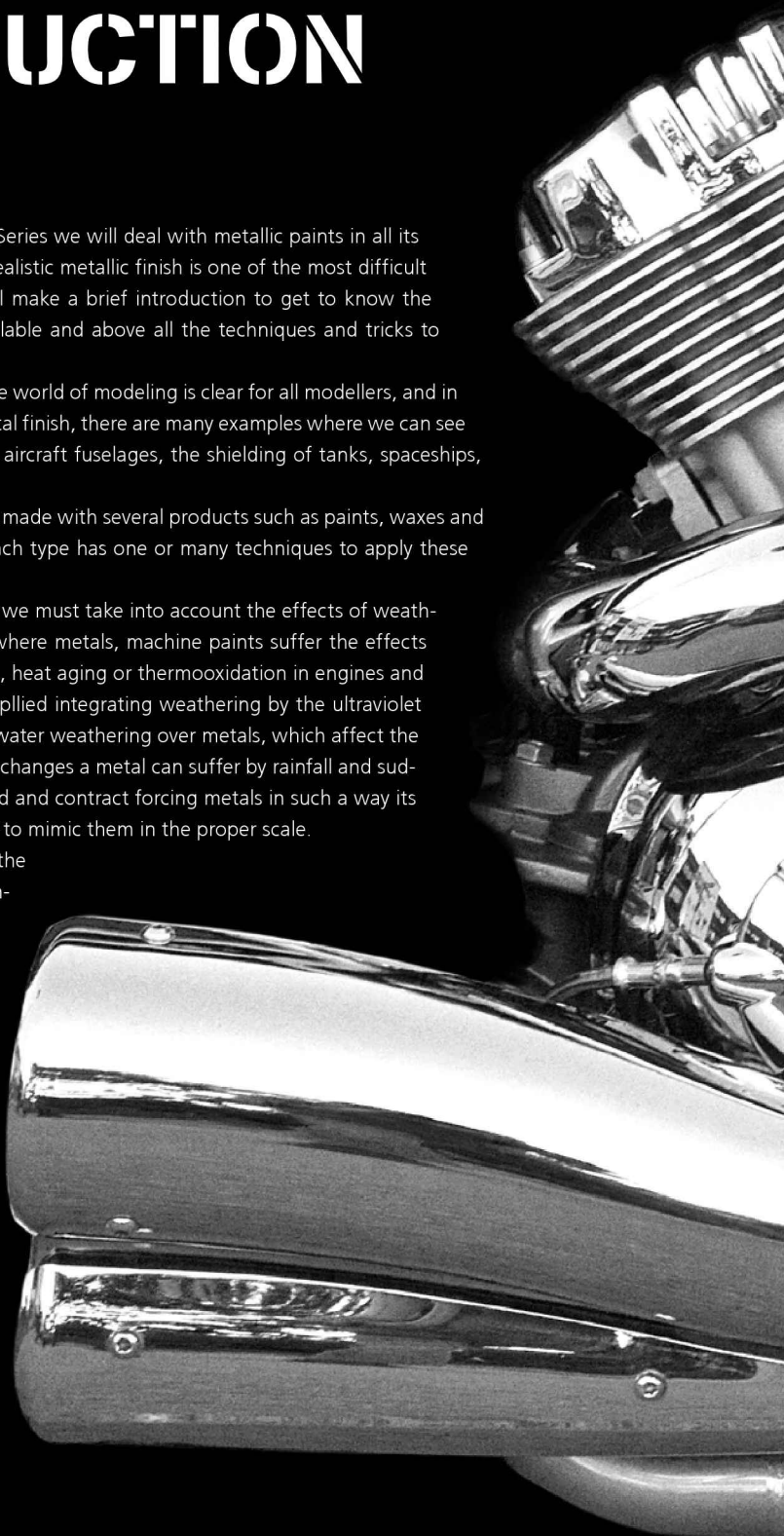
In this new volume of the AK Learning Series we will deal with metallic paints in all its aspects and on any surface. Getting a realistic metallic finish is one of the most difficult processes in modeling, but first we will make a brief introduction to get to know the metals to represent, the products available and above all the techniques and tricks to accomplish our desired goal.

The importance of metallic finishes in the world of modeling is clear for all modellers, and in many models require at some time a metal finish, there are many examples where we can see the use of metallics like the car bodies, aircraft fuselages, the shielding of tanks, spaceships, figures, etc.

Metallic finishes on scale models can be made with several products such as paints, waxes and adhesive metallic sheets, considering each type has one or many techniques to apply these colors and effects.

Also, for a realistic finish of the models, we must take into account the effects of weathering and corrosion of the real world, where metals, machine paints suffer the effects of oxidation due to atmospheric oxygen, heat aging or thermooxidation in engines and turbines. The effects of the weather applied integrating weathering by the ultraviolet radiation from sunlight or the effect of water weathering over metals, which affect the outer paint layers of metals. Also all the changes a metal can suffer by rainfall and sudden temperature changes, which expand and contract forcing metals in such a way its color changes, all these effects we have to mimic them in the proper scale.

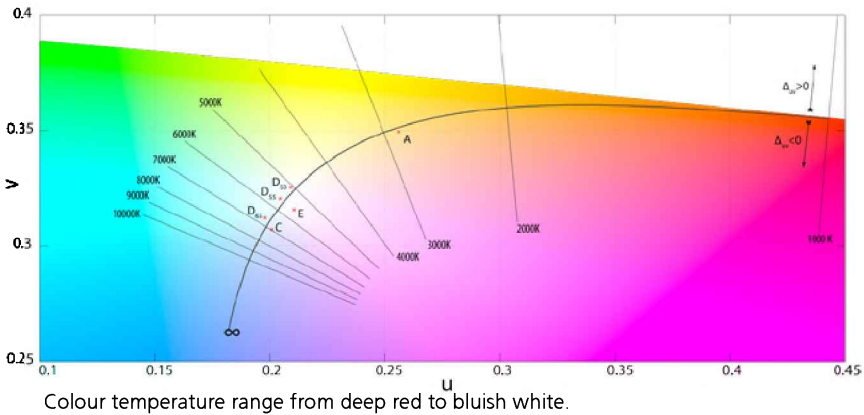
We begin with brief comments on the concepts of color that will help you understand metallics and its paint colors going after to dive into the world of weathering effects and corrosion of metals which are simulated in models of all scales.





# 1.1. THE COLOUR

The term color has several different meanings, in psychology is used when referring to the sensation produced by a human observer. In ordinary life we use it to describe a property of an object or in a more rigorous level Colorimetry, science that deals with the color, gives the following definition: The color is composed of those light characteristics different from space and time, being the light that aspect of the radiant energy that the human being perceived through the visual sensations produced by the stimulation of the retina. Since the late nineteenth century it is known that the radiant energy that we call light is a small part of the spectrum of electromagnetic waves, particularly our sense of sight is only sensitive part of the spectrum, whose wavelengths are between 440 nanometers (1 nm = 10<sup>-9</sup> m) and 680 nm corresponding to both ends of violet and red respectively.

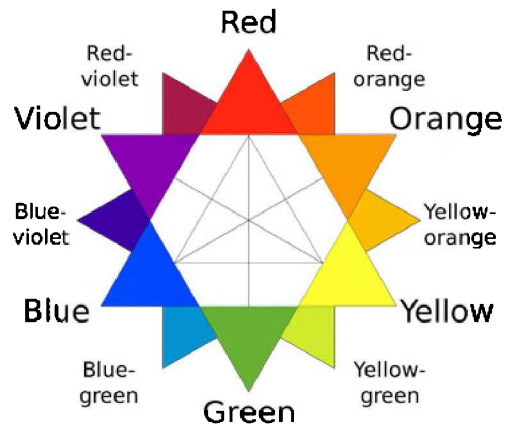


## COMPLEMENTARY COLOURS

According to traditional color theory based on subtractive primary colors and the RYB color model, which is derived from paint mixtures, yellow mixed with violet, orange mixed with blue, or red mixed with green produces an equivalent gray and are the painter's complementary colors. These contrasts form the basis of Chevreul's law of color contrast: colors that appear together will be altered as if mixed with the complementary color of the other color. Thus, a piece of yellow fabric placed on a blue background will appear tinted orange, because orange is the complementary color to blue.

So the old primaries depend on sloped absorption curves and pigment leakages to work, while newer scientifically derived ones depend solely on controlling the amount of absorption in certain parts of the spectrum.

MICHAEL THIS TEXT HAS BEEN TAKEN FROM THE WIKI  
CAN YOU CHANGE IT A LITTLE THANKS!



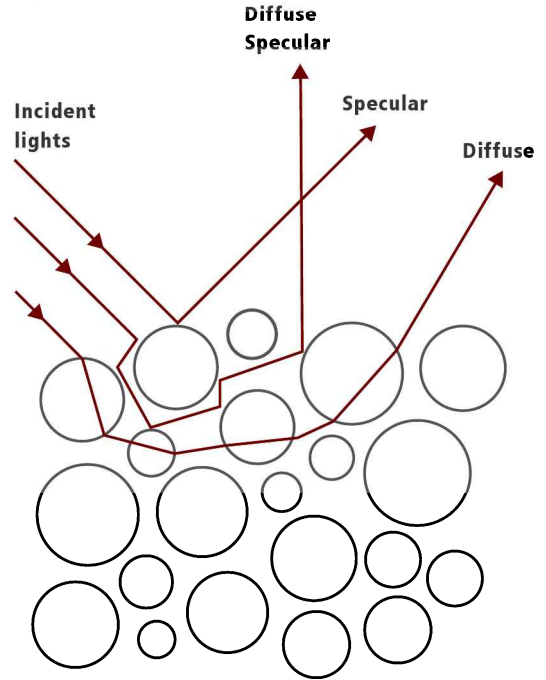
RYB color model wheel

# 1.2. PAINT COLOURS

Consider an opaque white paint, its base is a generally liquid carrier such as an oil or an acrylic polymer blended with a solvent and within it there are suspended fine particles of lead oxide, zinc or titanium (pigments). It is an important condition that the optical properties of the suspended material are very different from those of the vehicle, this means to have refractive values as different as possible from, in this case when light falls on the paint due to the difference in the rates of refraction between air and vehicle, part of the light is reflected. The rest of the light is refracted and enters the paint where stresses again the surface separating the vehicle of a suspended particle again reflected and refracted, reflected back to the surface part and part refracted again stressed over another particle repeating the process again and again. Paint uniformly reflects all wavelengths of the incident spectrum resulting its sum to white color.

If you want to get a colored paint, suspended particles are tinted with a suitable color or it is added tinted particles to the white paint, these particles behave as filters for light rays reflected and refracted when they pass through the paint.

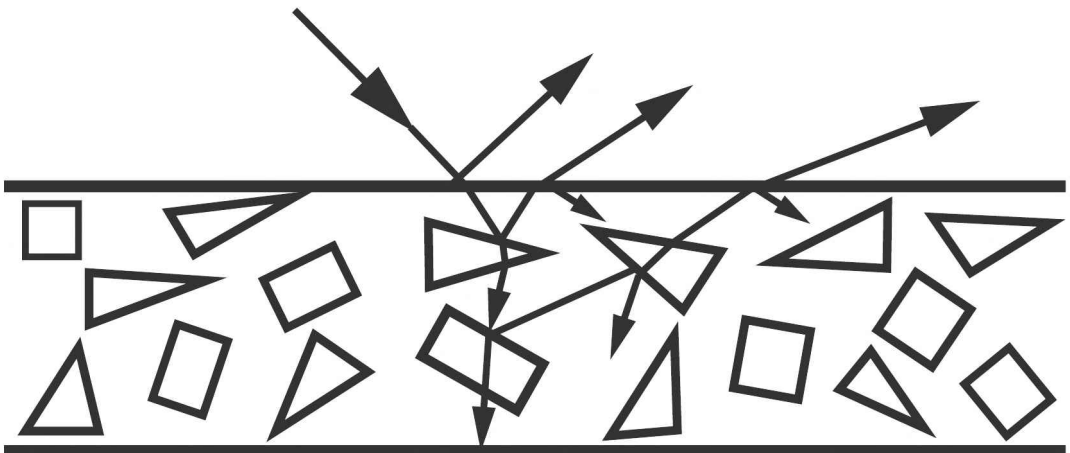
The light reflected off the particles goes through many of these filters on their way in and out through the paint, absorbing each filter part of the incident light, certain wavelengths. The spectral distribution of the incident light is altered by these absorptions and the outgoing light has selected wavelengths, then we say that the paint has a specific color corresponding to the selected wavelength.



**Diffuse:** Light penetrates the pigments showing the true color it has.

**Specular:** Light bounces on the pigments with a perfect reflexion.

**Diffuse specular:** Light bounces inside the pigments absorbing part of the pigment colors.

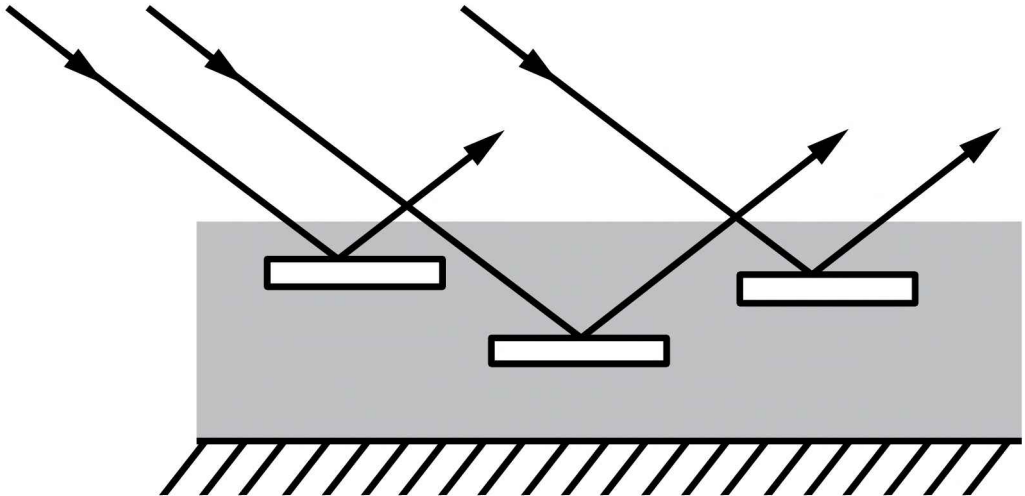


Ray reflection and refraction on pigments

# 1.3. METAL COLOURS

In this case the paint pigments are finely divided metal particles, the shiny effects of some metallic paints are obtained according to the reflectivity of the pigment, which depends on its concentration and orientation. To achieve specular metallic paint finish is necessary that the reflected light has parallel rays.

A reflectivity in which the light rays are not parallel gives a glossy or matte finish, the grain effects in metallic paint are related to pigment size and orientation, you may also introduce mica particles to achieve a pearly finish. The main differences between the existing metallic paints on the market for modeling reside in the vehicle (solvent) in which it is transferred and the quality of the pigment, as well as additives that implement their resistance properties, shininess, etc.



Graphic representation of light rays hitting the metal particles in a parallel form, producing a mirror effect.



Parallel particles cause a mirror effect as it happens in polished metals.

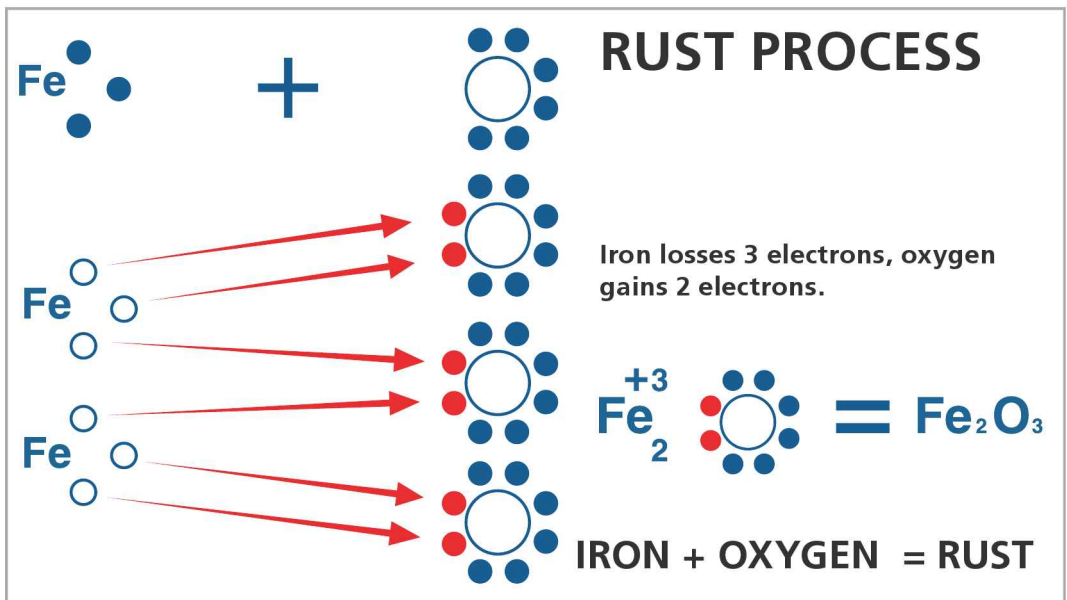
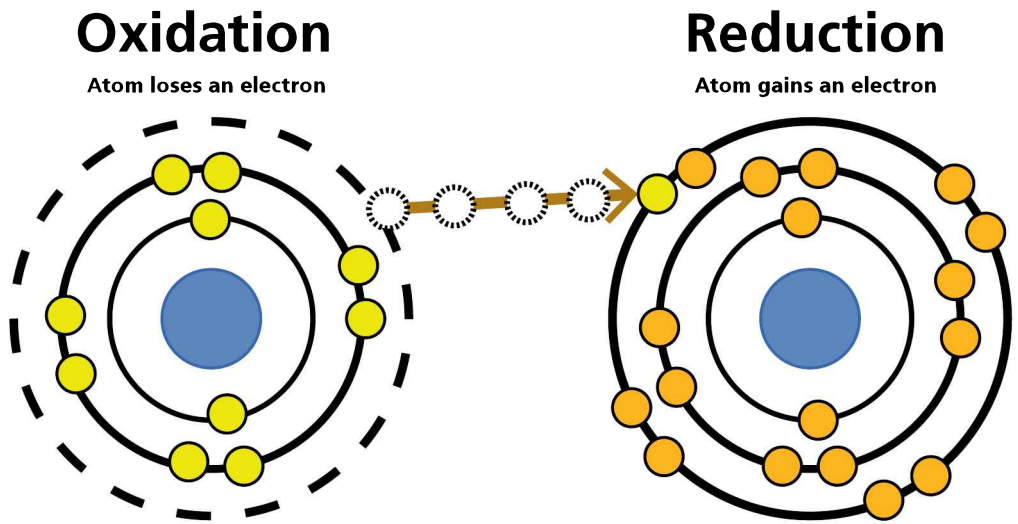


As particles start to spread the surface becomes more blurry, as it happens usually in chrome.



The more these particles are not spread uniformly on the surface it becomes more blurry.

Our interest focuses on metal oxidation due to atmospheric oxygen (O<sub>2</sub>), this type of chemical reactions are called oxidation-reduction or redox and occur when between the metal and oxygen there is an exchange of electrons. The metal gives up electrons (oxidized) and oxygen gains those electrons (reduced) by changing the electronic distribution of atoms both chemical species and joining the two atoms to form a molecule of metal oxide. Corrosion is the chemical destruction of a metal as it reacts with its environment, the most frequent kind of corrosion reaction is the oxidation of the metal by oxygen producing a mass loss in the metal and an alteration of its chemical and physical properties. All this theory is capable of being applied to modeling, and to each of the metallic colors to achieve in an artificially way (using paints and weathering processes) the most accurate effects of nature possible. First we will see each of the metals to represent that we can usually find in our models, for all figure, aircraft, vehicles, scifi lovers etc. To further dive into the techniques and products at our disposal to represent all these effects.



# 2. PAINT TYPES TO REPRESENT METALS

First we will discuss the different types of paint on the market distinguished in two groups: 1. acrylics and 2. enamels, waxes and lacquers. Further another group of paints or several materials that can be used to represent metal.

## 2.1. ACRYLICS

The first group, acrylics, are the ones least convincing results offer, especially in large areas because these metallic paints usually have not enough fine pigments and are too diluted when water is added. Although there are certain brands exceptions in the market, also its finish is usually not too shiny or produces a quite unreal porpurine effect.

We recommend them to paint figures mainly. On the other hand they have the advantage that they are applied as an acrylic but with the benefits that this painting method has. They dry as fast as acrylics, which sometimes for large surfaces becomes tedious, as we have to give several layers to achieve the desired effect. They are perfect for painting small parts or pieces such as arms, water bottles, metal plates, etc. They can be perfectly applied both by airbrush and brush or cleaned and diluted with water without major complications. This ease both when painting and cleaning is its great advantage, the vast majority of

modelers prefer them for their harmless and odorless power.

The lacquers from Tamiya and Gunze have a special mention in this section because they are not really a pure water paints and they are dissolved with an alcohol solvent base.



With a metallic acrylic medium we can turn normal metallic tones in a quick and effective way for small details. But you should not use it for large areas because it will not be as uniform as manufactured prepared paint.





Monolayer metallic paints are a very good option for finishes in civil or science fiction vehicles and it is convenient to use it with its own solvent not to alter its metallic properties or shininess.

There are other paints on the market, both for brush or airbrush, with different properties. What we have to require in a metallic paint is its fine grain, shininess, masking and weathering resistance.

## 2.2. ENAMELS, LAQUERS AND PAINTS

Enamels, lacquers and paints which are solvent based, such as waxes, are best to treat all surfaces and obtain best results, but also tend to be more tedious to work because having to use these stronger thinners in the process. They have a finer and shinier pigment (grain) which when drying produces has a very smooth and convincing surface to represent the metal parts. For further dirt and shade processes, they are perfect, since not seeking a matte or opaque effect often they maintain its metallic effect even after making weathering, corrosion etc. treatments. If we seek a less brilliant effect, we should paint the pieces with matte products or paint effects (washes, stains, rust

effects, etc.), even varnishing it with a base coat will help us represent such smooth effects. Like acrylics they can also be applied with brush or airbrush without complications. Their disadvantage is that when diluting and cleaning the tools it is necessary to do it with thinners, Turpentine Essence, turpentine, White Spirit, Universal Solvent, etc. This can cause a risk of poisoning by inhalation of the vapors these thinners emanate and some people prefer to discard them. There are odorless solvents, which facilitate this process but usually not as effective as normal solvents. Their finish is superior to acrylics.





In this chapter we include metal sprays. They are usually used in big car-bodys because they have less control than when using the airbrush. We can empty this paint and use it with airbrush, but it is still an enamel paint.

## OTHER METALLIC PRODUCTS

There exist another group of products not so well known and used in terms of product diversity, but with which can be achieved a good metallic feeling pretty convincing in figures. These are products that are not paints itself, as graphite powder, metallic pigments, colored metallic graphite pencils and printing inks. Both pigments and graphite are used mainly to decorate very small parts that require to highlight as edges of armor, swords, spears, buttons, wheels edges, etc., with a simple but controlled stroke on the volume to emphasize they highlight the desired metallic effect. If these materials are not agglutinated in the form of pens, they must be applied with a

cotton swabs or a brush shading it little by little. There exists a problem that significantly reduces the accuracy of its application and it can mess all the surrounding parts of the figure that do not require this effect. The printing inks are a perfect material to paint armor, shields and large surfaces, because of its high coverage power once dissolved with a little of white spirit. The main problem with this material is that or it takes a lot or does not dry by itself, being formulated to be used in art crafts with a special fixing and drying system in miniatures we should mix them with some kind of paint containing a drying component such as oils or enamels.



The printing inks can be used to refine silver tones.



Any brand has in its range transparent colors for tinting pieces, usually enamel type colors give better results and avoid accumulation zones or ink marks.

When all these metal paints are used, we must apply new brushes or half-used. They will be used only for that because metal pigments get sticky to brushes and when we would use common paints can be polluted with metal pigments.



Alcohol based metal paints as good to reach a great finish but there is a big offer of them in market. They are also volatile and unpredictable because of its alcohol base. It can also get dried even before finishing painting. They are applied with brush because airbrushes accelerate its drying time and can also produce a grainy finish.

# 3. MAIN METALS IN MODELLING

## INTERESTING METALS FROM THE MODELLER POINT OF VIEW.



### IRON

Recommended weathering: rust streaks, rust deposits and washes.

We consider iron a ferrous alloy of iron and carbon with a carbon content below 0.1%.

This metal in its pure state has not too many applications (has a silvery gray color) but its alloys have.

Iron (Fe) oxidizes in two stages, first it is combined with oxygen through a redox reaction to form iron oxide II (ferrous oxide FeO). In this process the Fe gives away electrons to atmospheric oxygen, this reaction can be favored by the presence in the atmosphere of carbonic acid and sulfuric acid formed from contamination products such as CO<sub>2</sub> (carbon dioxide) and SO<sub>3</sub> (sulfur trioxide). The iron oxide II presents a blackish color. In a second step iron oxide (Fe<sub>2</sub>O<sub>3</sub> ferric oxide) is deposited as rust, presenting a reddish orange, rust forms a layer adhered to the metal porous surface and penetrates to continue chemical its reaction inside the metal altering the strength properties of the iron. Other compounds which are also involved in iron corrosion and which are due to the effects of water and CO<sub>2</sub>, are iron hydroxide II (Fe(OH)<sub>2</sub>) and iron carbonate II (FeCO<sub>3</sub>), both presenting a greenish color and ferric hydroxide (Fe(OH)<sub>3</sub>) with brownish color. Corrosion of iron also occurs in the joint areas with a different metal due to differences in their electrochemical properties, this process can be seen in some welding samples.



# 2

## STEEL

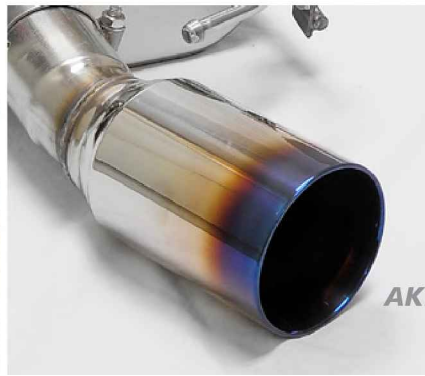
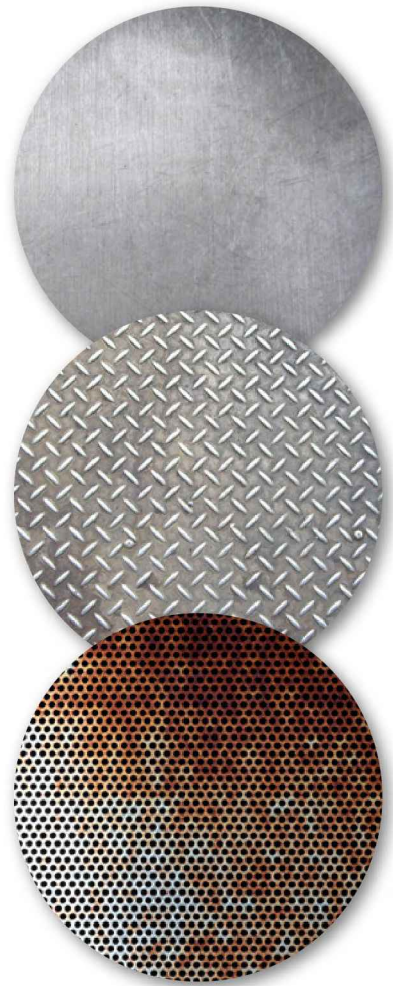
Recommended weathering: rust streaks, rust deposits, and rust wash

This metal is very important in modeling and colors may vary according to the percentages of the alloy, treatments or coatings. Its oxidation is normally known orange reddish appearance.

Steel is a mixture or alloy of iron Fe and carbon C, this one in amounts of 0.03 to 2.2% of its mass, this mixture results in an interstitial compound due to the different size of the two atoms.

There are many types of steels and with different properties and applications based on small percentages of other elements added to the initial mixture such as manganese, silicon, nickel, chromium, molybdenum, etc. Oxidation of common steel is given by the oxidation of iron as most abundant element. A special type of steel is stainless steel having a high corrosion resistance due to the presence of a complex chromium oxide on its surface, this surface protects the interior of the steel from oxidation, it is said that the steel becomes passive. Stainless steels must contain at least 10% chromium by weight and become passivated spontaneously by exposing the surface to an oxygen atmosphere, you can also promote passivation by treating the stainless steel with nitric or citric acids. Stainless steel passivation obscures the original steel color from a bright light gray to a dull gray. The high temperatures required for welding stainless steel produce an oxide layer of dark gray in the welding surface, when mechanically removed we observe a thermocoloration with shades ranging from red to blue straw.

Since the invention of tanks until World War II, tank armor increased thickness to withstand the growing size and power of the antitank guns. A tank with enough RHA could withstand the largest anti-tank guns in use at the time.





## ALUMINIUM

Recommended weathering: AK4161 neutral grey filter or light grey filters.

Probably the most important element from the point of view aircraft modeling, its color also varies depending on its alloy, aluminum colors like White, Duraluminium or Dark Aluminium are essential to faithfully represent our machines.

Although aluminum has a high affinity for oxygen, also it has a high corrosion resistance due to a passivation reaction which consists on the formation of a surface layer of aluminum oxide III ( $Al_2O_3$  Alumina), this layer is impermeable and adherent, and stops the oxidation process in a similar way to what occurs with stainless steel.

The alumina layer changes the aluminum color from shiny silver gray to a darker matte gray.

The aluminum magnesium alloyed with other metals, manganese, copper, zinc and silicon or titanium and chromium also has also made this metal one of the most important, both in quantity and variety of uses, is today a versatile material.

Aluminum metal is coated spontaneously from a thin oxide layer that prevents its corrosion.

However, this layer disappears in the presence of acids, particularly hydrochloric and perchloric.

Aluminum alloys behave quite worse when corrosion appears than pure aluminum, especially if they carry annealing treatments, with those having serious intercrystalline corrosion and low voltages due to the microstructure presented in these states.



# 4

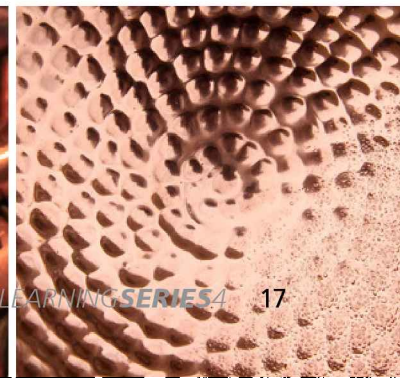
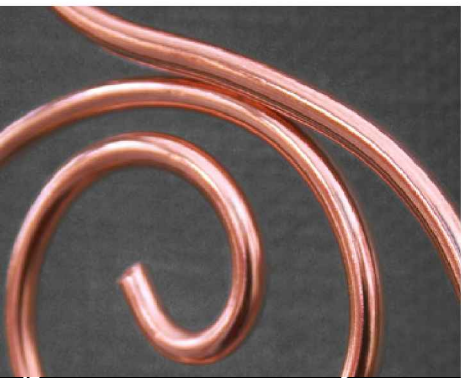
## COPPER

Recommended weathering: AK4162 light filter for green or blue/green oils.

Copper has great importance in modeling as a very expanded color due to the large number of objects and pieces of this material at any time, from whole commemorative figures to parts of ordinary day use. Copper has a pinkish color and when it oxidizes with atmospheric oxygen it darkens forming a protective coating that makes it resistant to corrosion, surface oxidation occurs slowly.

The copper is oxidized in two compounds, copper oxide I (cuprous oxide  $\text{Cu}_2\text{O}$ ) with a reddish brown color and the copper oxide II ( $\text{CuO}$  cupric oxide) with a black color.

Oxidation of copper oxide I can be accelerated by high temperatures or exposure to moisture. Over copper significantly act other compounds present in the air, land and sea, leading to results such as copper chloride II due to the exposure to sea salts (cupric chloride  $\text{CuCl}_2$ ) presenting a yellowish green and because of hydration acquires greenish blue hues. It is also common the formation of sulfates and carbonates of copper patina shaped of colors from green to bluish green. As copper alloys will name the most common; brass and bronze.





## BRONZIE

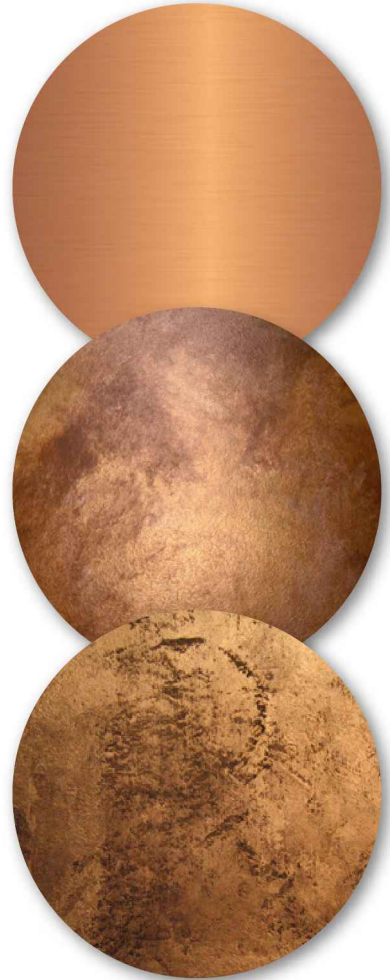
Recommended weathering: green/ blue filters , depending on the degree or paint use these colours with the pointing technic.

Like the previous element its alloy is much stronger than the pure element, it has numerous real applications, so its interest in reproducing it is evident. From medieval cannons, valves, machine parts, weapons, armor, propellers etc.

It is a copper alloy (main element) and tin (from 3 to 20%), but may also be added other metals such as aluminum, manganese, nickel, phosphorus, chromium, etc., giving different types of bronzes and having several colors, its surface can become passivated so it is very resistant to corrosion even for sea related objects, it is very common in its surface the greenish patina.

Due to its specific temperature it is used for transferring heat. Except steel the bronze alloys are better than iron for any application.

For example in old cannons the bronze proportion is of a 90-91% to 9-10% of tin.





## BRASS

Recommended weathering: AK4162 light filter for green or sepia coloured filters.

Brass is an alloy of copper and zinc and its color depends on the percentage of zinc ranging from a yellowish red (2-14% zinc) to bright yellow (30-50% zinc), usually it acquires a slightly darker tone with time and a blue-green patina by the action of chlorine and acetic acid (vinegar).

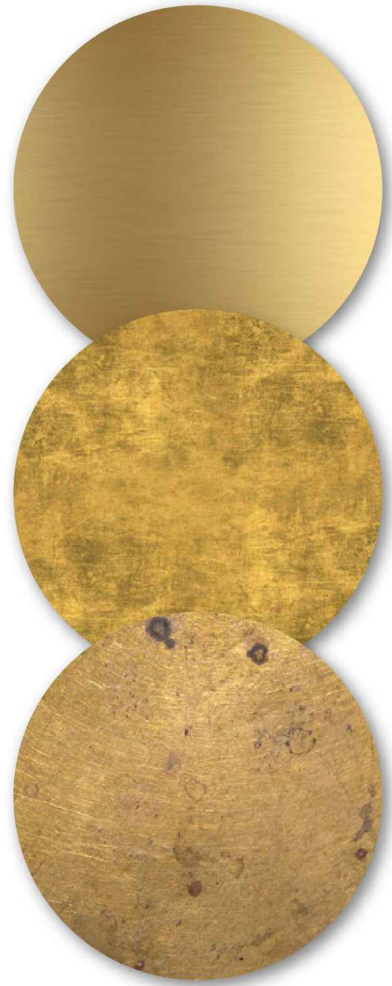
The characteristics of brass depend on the proportion of elements involved in the alloy so that some types of brass are malleable only when cold, other exclusively when hot, and some are not at any temperature.

Brass is harder than copper, but easy to mechanize, burn and melt. It is resistant to oxidation, to saline conditions and is malleable, so it can be rolled into thin sheets. Its malleability varies the temperature and with the presence, even in small amounts of other metals in its composition.

Has application in weapons, utensils, musical equipment, pods, coins etc. As it is not affected by salt water, it is also used in the construction of ships, fishing boats and marine equipment.

The alloy due to the salt when affected loses luster and gets darker although it will not rust.

Brass has a bright yellow color, similar to gold, feature that jewelry takes advantage of.





## TITANIUM

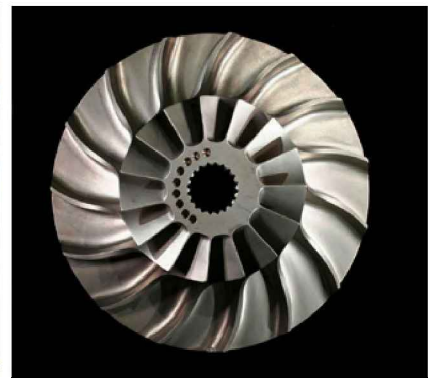
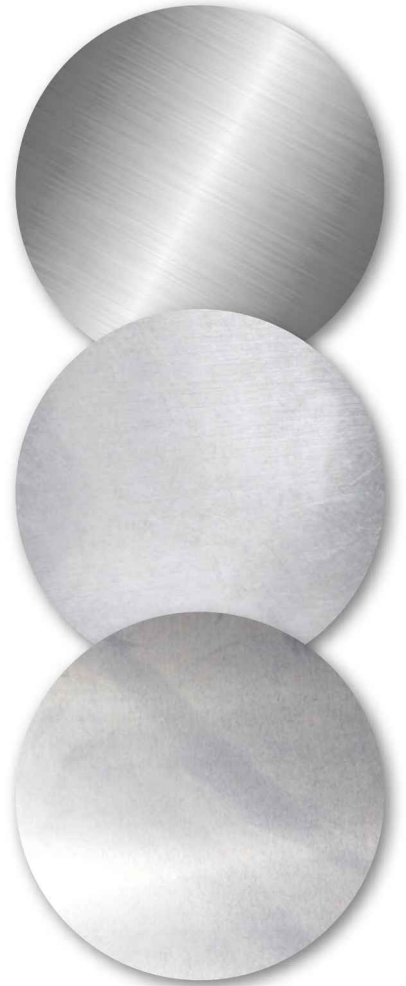
Recommended weathering: Diluted inks or sepia oils.

Shiny silvery white metal, is used in aircraft parts (rotors of turbines, jet nozzles, etc.) among other uses, it is usually alloyed with aluminum, manganese, iron, molybdenum, etc. It is as strong as steel but half of lightweight, resists corrosion when passivated, acquiring a darker color or even black. At high temperatures presents thermocoloration with darker shades with a bluish red shade, its main oxide, the titanium oxide IV ( $TiO_2$ ) has a white to yellowish white depending on its purity. Large ships and boats use as well titanium. It is used in alloys with steel, iron and other metals to build powerful naval propellers or large naval machines. In construction due to its malleability can be applied to architecture, an example is the Bilbao Guggenheim Museum, which is located in Spain, which was built by a Canadian architect.

A perfect propeller should weigh the lesser, be as rigid as possible and not be altered by the sea environment and being able to easily repaired. Therefore a material very suitable if not for its high price and difficulty to work and repair it would be the best option, the titanium is totally immune to oxidation, light and very tenacious. The metal is known for its high resistance to corrosion and oxidation conditions found in the environment. The aviation industry uses a lot for its light weight and refractory feature, that is able to withstand environmental conditions in which it is immersed without significant alterations in their physicochemical properties.

Its main applications reach everyday uses in objects such as watches, jewelry, plates, golf clubs, etc.

It is not a good conductor of heat and electricity, it cannot be magnetized, so it is the preferred material by space shuttle engineers, satellites and other elements material.

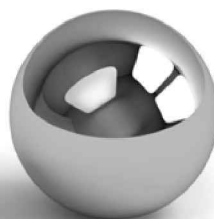




## CHROME

Recommended weathering: Smoke colour inks.

Has a steely gray and shiny white color, its name comes from the Greek chroma (color). It is used in corrosion resistant alloys of high hardness (stainless steel) and heat resistant. Its main oxides are chromium oxide III ( $\text{Cr}_2\text{O}_3$ ) with green changing to brown at high temperatures, chromium oxide IV ( $\text{CrO}_2$ ) which changes from black to dark brown and chromium oxide VI ( $\text{CrO}_3$ ) with a dark reddish color.



## SILVER

Recommended weathering: dark brown filter

Grayish white metal, its surface when in contact with the atmosphere darkens due to the formation of silver sulfide ( $\text{Ag}_2\text{S}$ ), its main oxide is silver oxide  $\text{Ag}_2\text{O}$  which changes from black to dark brown.



## GOLD

Recommended weathering: light red-brown filter

Chemically inactive metal, has a high resistance to corrosion, its main oxide is gold oxide III ( $\text{Au}_2\text{O}_3$ ) of reddish-brown color.



# 4. TECHNIQUES, SAMPLES & WEATHERING

Technics to represent different effects are really important. Here we will expose step-by-step how to give life to our models describing the process and with examples. The techniques are conditioned by the metal that we want to represent and the paint used. As we will see now, in this volume and the next one we see as for some surfaces it is good to use acrylic paints, especially in figures and small parts (which we will in depth in the next volume) and how to achieve the most realistic results in aircrafts, vehicles or larger surfaces, we will mainly use lacquers and enamels because of its characteristics.

Before using any enamel paint; Humbrol, Alclad, Xtreme etc., is important to prime in a dark color before painting a metallic tone.

This priming becomes essential depending on the type of paints and colors, usually is the manufacturer who

indicates which base is the right one to use. There are more delicate colors than others, a pigment with more coverage or shinier within the same range and same brand for different metallic shades.

Metallized paints, are another variation in metallic paints and we have monolayer paints that can obtain metallic sheen and color in a single application or bilayer in which the paint and shininess are separated as discussed in this book.

Metallic paints are even more sensitive than standard paints and require special attention to these details.



Humbrol paint is of very good quality, but it is convenient to dissolve it a bit to use with brush or airbrush, since it is too dense, and run the risk of stopping the surface.

A manufacturer when developing metallic paints will have to take into account the parameters by which wants his paint outstand taking into account for what it will be used and the requirements of the people who will use them, no other branch of industry or fine arts need about as specific requirements as modeling. Metallic lacquers are difficult to produce with quality. AK Interactive produces Xtreme paints regarding all the modeler required features.



Piece with metallic layer applied, in this case Xtreme Metal.



The same piece with weathering treatments applied.

The difference is given by the fineness once painted by (the particle size), resistance to washes and weathering with all kind of solvents, shininess and ease to paint. In the case of new Xtreme paints, for example, designed expressly for the needs of modelers, have fulfilled all these characteristics. These colors are recommended to paint with airbrush and represents a breakthrough in metallic paints.



When facing the paneling phase choosing the color is very important, so that all makes sense and this integrated. A perfect color for paneling any metallic tone is a bluish gray black, that is why the paneliners have that tone, you do not need to get too crazy at this point because actually the metal color resembles to gray, and we can make the panel lines on any device in metallic tones with this color.



# METAL PAINT COMPARISON TEST

**TOMÁS DE LA FUENTE**

The following chart shows not only a comparison of metallic paints by the independent modeler Tomas de la Fuente but a research for modelers to find the best results, we decided to include in this volume because we used to see how a comparison itself is performed, and depending of the kind of tests how the different paints react. We can see what are the most important characteristics of this type of paint, and apply this knowledge when using them to paint our object. A painting is better or worse than another to the extent that better or worse suits to our objective, and above all to our liking.

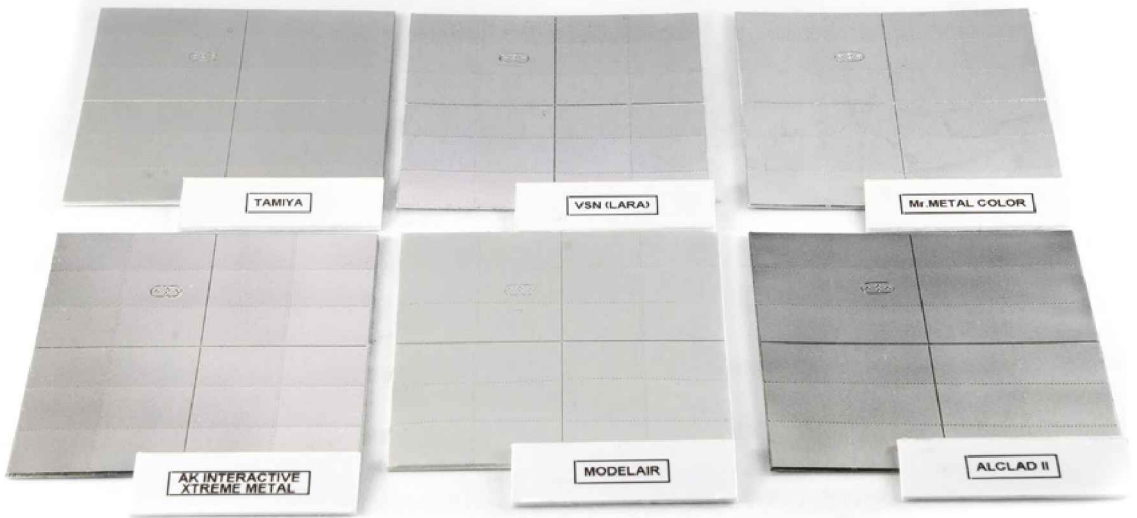
**Tests to which the paints have been submitted:**

- Particle size.
- Metallic shininess.
- Masking resistance.
- Significant changes when varnishing.
- Enamel panel liners resistance.
- Alcohol diluted paints reaction.
- Reaction to paint diluted with Tamiya white lid.
- Reaction to paint diluted with Tamiya yellow lid.

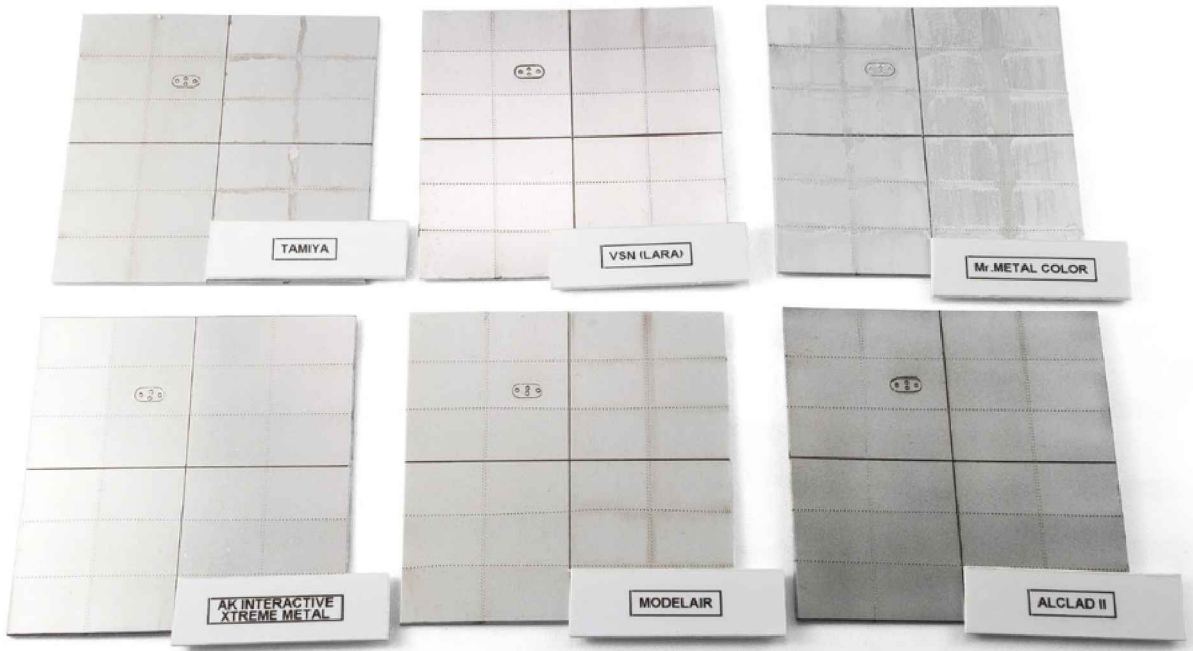
**I chose aluminum color from several manufacturers to compete on equal terms, although there are lighter and darker aluminum. The brands of paint that I used were:**

- Tamiya enamel XF-16
- VSN Aluminium (also known as Lara paints)
- Mr Metal Color Aluminium (MC 218)
- AK Xtreme Metal Aluminium (AK 479), (used over a primed black base, although the latest tests were made over a non-primed plate, like in the picture.)
- Model Air Aluminium (AV 71.062)
- Alclad II Aluminium (ALC-101), (over an enamel black base painted with black Tamiya X1)

	Particle size	Metallic shininess	Masking resistance	Varnishing changes	Enamel weathering resistance
<b>XF-16</b>	Large	Bad-Normal	Normal	It increases metallic sheen and darkens a little.	Harms the paint in the not varnished areas and chips out when cleaning.
<b>VSN</b>	Fine-Very Fine	Good	Good	No noticeable change.	No noticeable change, although in the not varnished areas it darkens globally.
<b>MC218</b>	Very fine	Normal	Bad	Clarifies some surface and darkens slightly.	It harms both areas!! and chips out ewhen cleaning.
<b>AK479</b>	Fine-Very Fine	Good	Good	No noticeable change.	No noticeable change.
<b>AV71.062</b>	Large-Normal	Normal	Good	Increases the shininess.	No noticeable change in the varnished areas, although in the not varnished areas when cleaning it leaves circle stains.
<b>ALC-101</b>	Fine	Good	Good	Slightly increases the shininess.	No noticeable change, although it darkens slightly around the not varnished areas.



Results of the paints applied without weathering



Final results

When we need to oxidate and age a metal colour, we must know how it will react so that we will avoid mistakes.

When applying weathering you have to consider the paint that we have applied, as some products are very aggressive and could damage the metallic color layer, partially, only affecting the shininess, or totally redissolving the pigment.

The products for weathering are the usual ones: washes, paneliners, filters, oils, etc., but in the case of metallic colors by their shininess and resistance qualities have to be even more careful when soaking too much or making aggressive techniques.

Currently there are paintings created specifically able to withstand any aggressive process it.

We also can find acrylic weathering products such as florymodels that act as a patina, and due to its acrylic nature are little aggressive on other metal products.

1

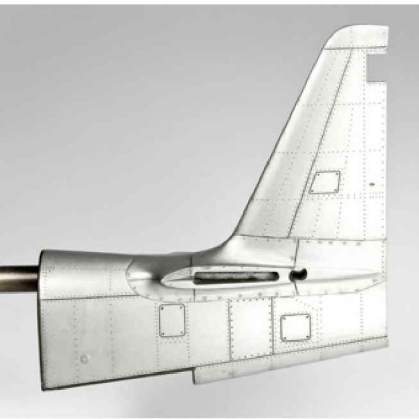
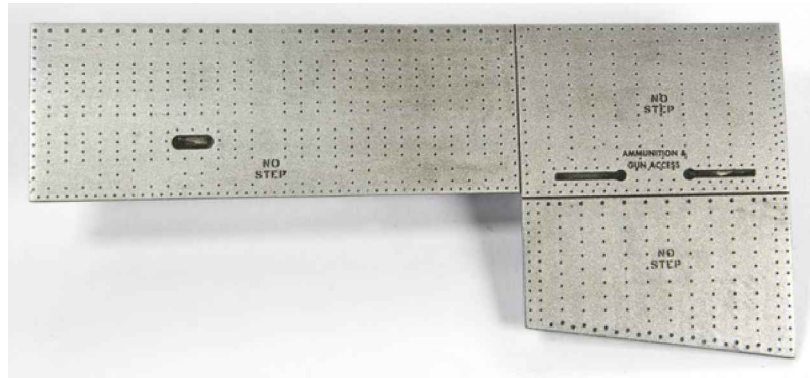
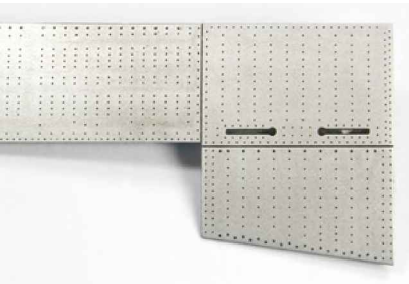
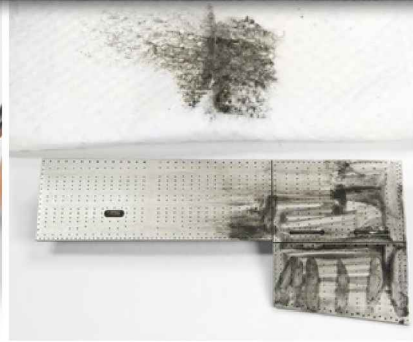
The combination of metallic colors with weathering is the key to achieve a realistic result.

2

With general or selective washes we give depth and realism to the metallic pieces, bear in mind the dirt affects equally to any part of the model.



In the following examples we treat as a piece with a general wash in this case with Tamiya paint, using a technique of painting completely the piece taking advantage of its metallic color, removing it after highlighting the crevices. Not all paint resists this process.



In this example we see how to apply a light weathering to create an effect of mud on a previously paneled piece. Also defining a panel to change its hue. As we can see the possibilities are endless with metallic shades and we can use any technique.



# 4.1. WAX PAINTING

The metallic waxes, are widespread because of its ease when applying by brush and its realistic results. They can be applied directly or with airbrush, if they are not too dry as it is enamel based, it is convenient to varnish or make the weathering effects with acrylic products. One of its main advantages is its great coverage range.

Wax paints base can be diluted to use with airbrush but we have to take into account its peculiar drying characteristics.

- 2 It allows to be polished with a paper or cloth that does not leave fur.



3

It is recommended to use preferably acrylic weathering products, varnish previously with acrylic related to avoid damaging the paint or at least let the paint dry enough, but bear in mind that its drying time is slow due to its wax nature.

4

Different brands produce these paintings with high coverage power, perfect for small areas.

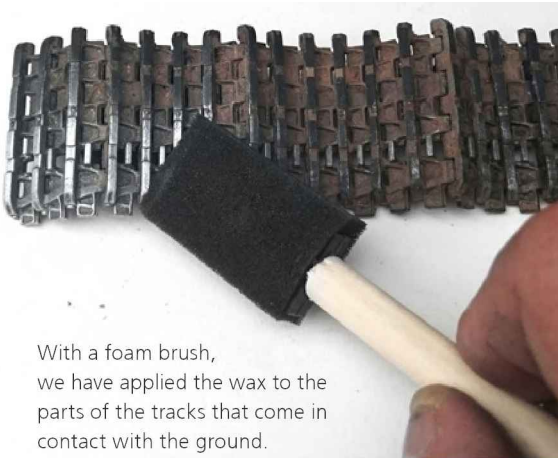




A cotton swab can be a good tool to apply the wax and spread it properly.



Waxes can, selectively and with more control, be applied with a brush. In this example we see an application with a brush on to the teeth of a drive sprocket.



With a foam brush, we have applied the wax to the parts of the tracks that come in contact with the ground.



The appearance and brightness of the wax is very realistic once applied.



## 4.1.1. GERMAN MP40 WITH AK'S TRUE METAL

RUBÉN  
GONZÁLEZ

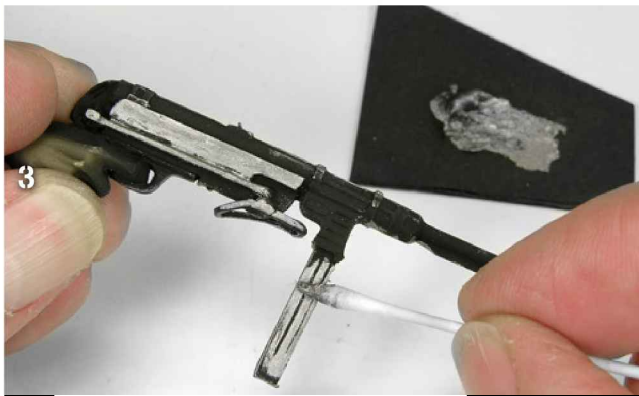
AK metallic waxes are a kind of enamel paint in the form of a paste which is very easy to use and with surprising results. There are many ways to apply these waxes and offer a wide range of colors to achieve any desired metallic finish. We will try to get the burnished metal finish of a weapon with a few simple steps and reference AK461 Gun Metal.

The materials used are the wax that will be placed on a piece of cardboard and a non-shedding cotton swab. The preparation of the resin part consists of first applying a layer of matte black acrylic paint.



1 Apply the wax with a cotton swab.

Run the swab over as much of the surface as possible without worrying too much about its appearance at the moment.





4

Now begins the washes phase to try and give volume and depth to the piece. Keep in mind that waxes are enamel based and if you use enamels to apply effects over the wax base, the wax you already applied can reconstitute and come back to life and ruin all of your previous work. For this example we have used a mixture of AK719 and AK3019 Black satin for a dark brown patina, diluted with water to about 50%. You must try to reach all nooks and crevices of the piece.

One of the qualities of these enamel waxes is that they can be diluted with virtually any type enamel solvent.

Once the application with the swab is finished, rub the piece with a soft cloth. This way we get a clean and polished finish.



5



6

With AK086 Dark Steel pigment, we will polish the surface to give it the proper brightness. This way of applying the pigment makes only the most prominent raised surfaces to be polished preserving the effect of the previous wash in the less accessible areas. This way we get very bright and polished raised areas, and nooks and deeper areas have a darker look achieving a very realistic effect of metal.

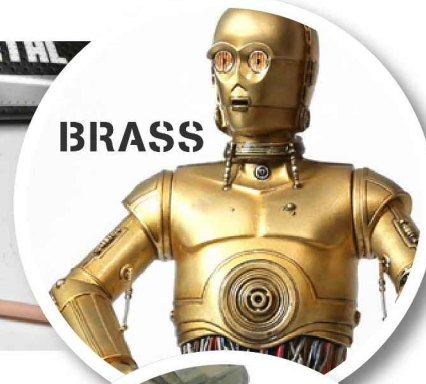
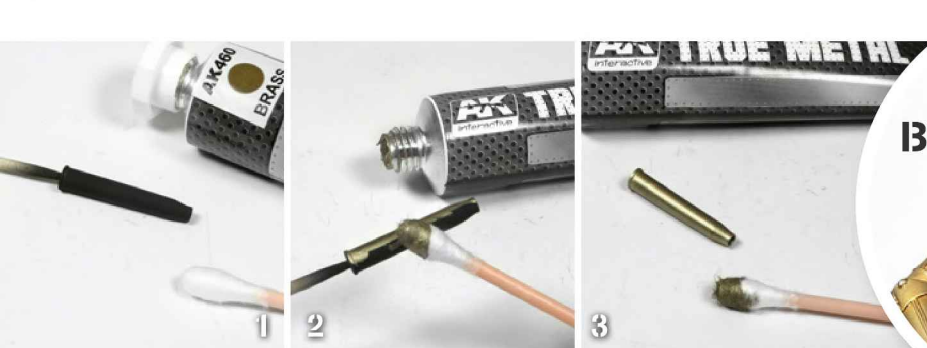


In this picture you can see the entire MP40 finished and with a very convincing brushed metal finish.

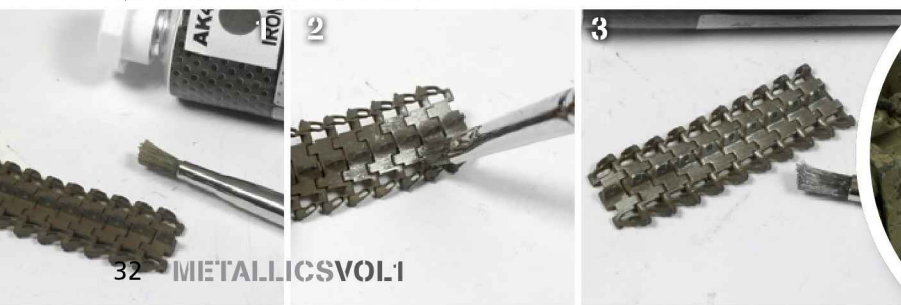
## 4.1.2. OTHER WAX PAINTING EXAMPLES



In this sequence we see that with a simple wax we have transformed a resin piece in a nice metal trophy. After priming in black, the wax covers the surface perfectly and with a sponge to polish it. The result is spectacular.



In these sequences we can see other samples with different metals applied with a cotton swab or brush.



## 4.2. PAINTING WITH PIGMENTS

Pigments are paints raw material. In modelling these are mixed with calcium carbonate to take advantage of its properties, and the quality depends on the pigment used, its grain and origin. Starting from a high quality minced pigment the final result will be much better. In colours like gun metal it becomes really relevant to avoid the purpurin effect, which results in very unrealistic finishes.

There even exist pigments to mimic chrome, without getting to be a perfect chrome but it can come very handy sometimes, depending on the piece it can be very useful, although its main problem is the price. An important characteristic of metallic pigments is to understand you have to use little quantity, the less used the better results, otherwise it can look unrealistic.

Although chrome pigments are good they can become somehow tedious to handle.



extend the pigment gradually in a circular way so that it will stick properly on the piece.

This product produces different results depending on brightness and hue of the base used, for example to achieve a mirror effect result we would have to apply it on a bright polished black surface allowing to be repolished for the final result.



Only the pigment by itself gets realistic results and it is very simple to apply.



The Steel pigment can be applied with just the fingers to enhance the volumes of pieces previously painted in black / dark gray.

## 4.2.1. TOWING CABLE EXAMPLE



This add-on is present in practically any light, medium or heavy military vehicle, either armored or not so we must pay special attention to their representation in models that incorporate it among their equipment. While some manufacturers continue to include in their models this plastic accessory, others take time providing them with metal wires, plastic heads or resin to be more lifelike.

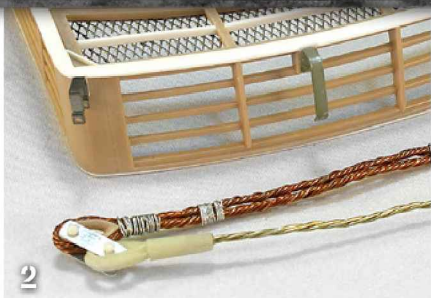
Despite this, there are in the market a wide range of aftermarket manufacturers to replace this accessory and equip our vehicles with towing cables made of

copper or white metal, highly malleable materials and it is easy to give that peculiar look and shape more adequate to something that has been highly used. We can also make them ourselves from the original piece, replacing the cable with one twisted ourselves and then adding the plastic heads.

The perfect way to work is to place it to its provisional placement and unfixed, shaping the wire into its final position then proceed to paint. After completing his painting, we will fix them permanently without changing its shape.



1  
Cables originales de plástico, cables de cobre y latón propios y varios aftermarkets.



2  
Aspecto de un cable completo realizado por nosotros mismos a partir de hilo de cobre y latón blando.



3  
La pintura base de la pieza dependerá del vehículo y como se quiera mostrar.



4  
Para reforzar el empolvado anterior con óleos y conseguir el aspecto polvoriento y terroso...



5  
... fruto de arrastrar el cable por el suelo se han aplicado pigmentos claros AK040 Polvo claro, AK042 Tierra europea y AK143 Burnt umber a pincel. Tras ello se han fijado con AK011 White spirit.



7  
El último paso consiste en aplicar pigmento AK086 Dark steel para conseguir un efecto metálico definitivo aplicado con los dedos.



# 4.3. PAINTING METALLICS

In this example with Xtreme Metal paints will see the importance of using multiple tones. Caring about aircraft aluminum color painting with its different shades is very important to achieve a realistic result. This technique is best explained with an example where we will see the contrast in different shades of aluminum.

**DANIEL  
ZAMARBIDE**



We do all the assembly of the model and prepare for the painting process.



To begin the painting stage, the first thing is to mask parts as the transparent windshields.

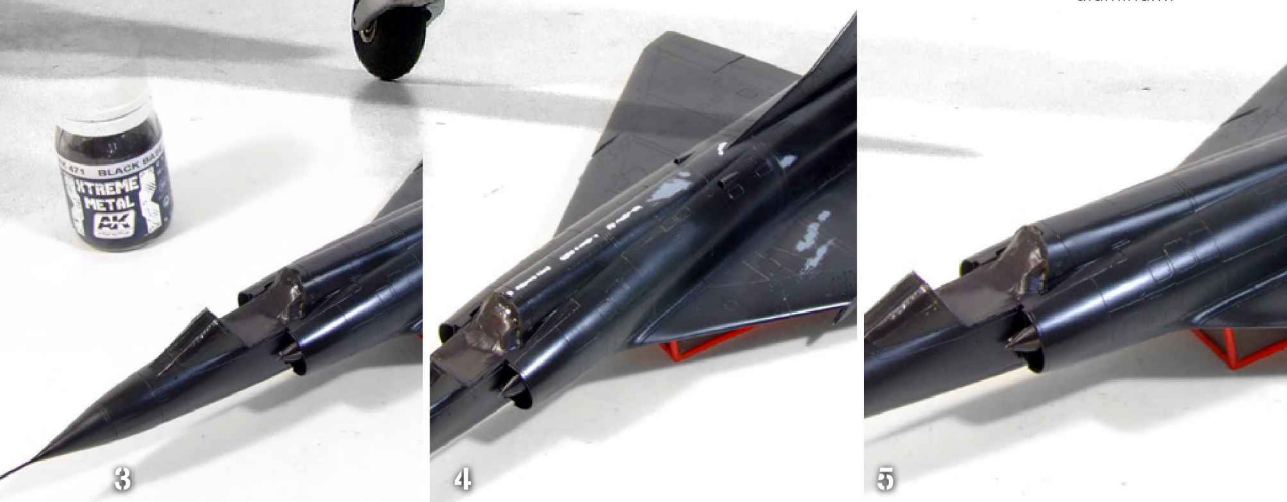
## 4.3.1. ALUMINIUM METAL AIRCRAFT WITH XTREME METAL

### MIRAGE III C ISRAEL AIR FORCE



In this example with Xtreme Metal paints will see the importance of using multiple tones. Caring about aircraft aluminum color painting with its different shades is very important to achieve a realistic result.

This technique is best explained with an example where we will see the contrast in different shades of aluminum.



3 Before applying the metal paint, apply a coat of black primer.

4 The primer, while improving the paint grip serves to test the several failures of joints and sanding.

5 After arranging the joints, re-prime the affected areas in black.

6

Again we mask all areas that are not to be painted with metal paints.



7

Apply the first color, in this case, the aluminum color.



8

Carefully withdraw masks revealing the underlying red.

9

The Xtreme Metal paints resist the masking tape very well.



10

Then apply a dark aluminum.





11  
Then apply a dark aluminum.



12  
Carefully remove the masks,  
I did not find any problems in the procedure.

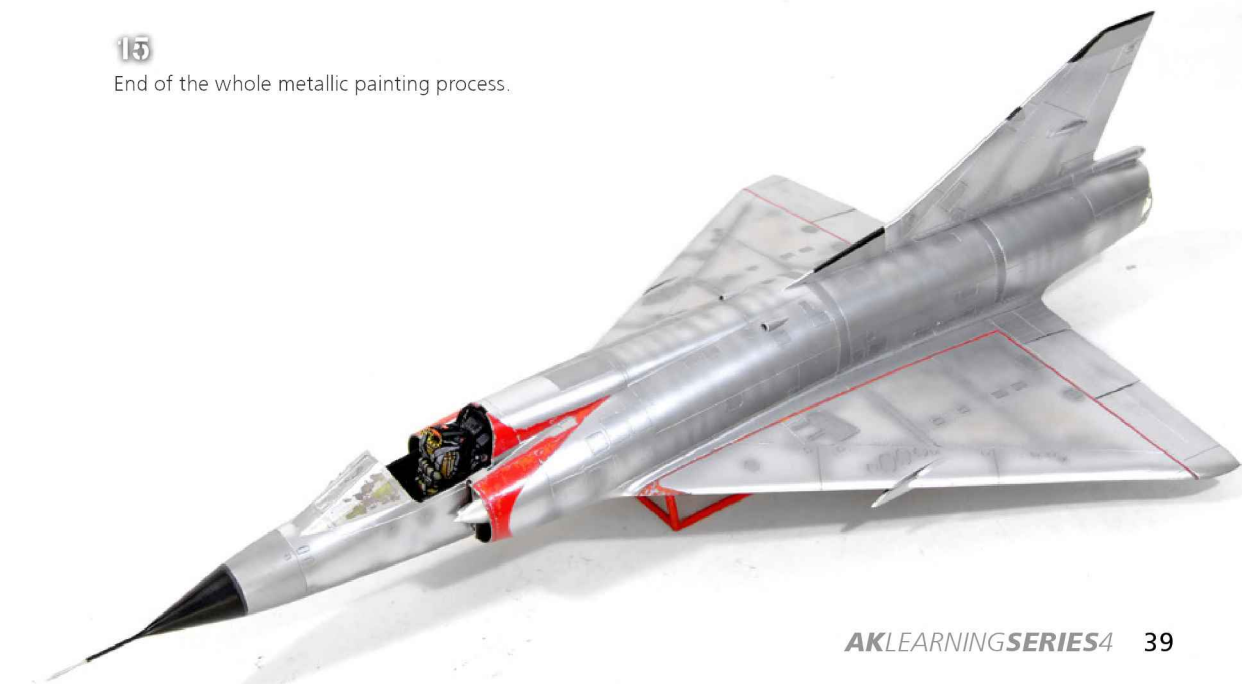


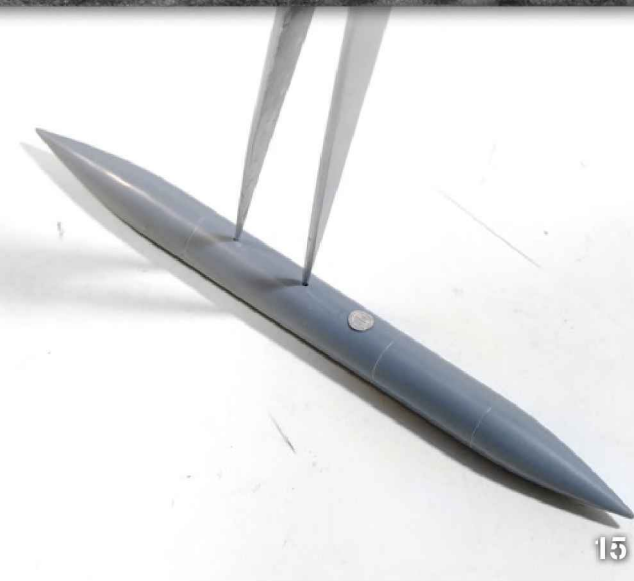
13  
Finally, with dark aluminum,  
we darken the lower areas of the fuselage  
and the panel lines.



14  
List of colors used,  
with only three colours I obtain spectacular results.

15  
End of the whole metallic painting process.





15



16



17

15. We prepare the fuel tank for the painting phase and show some simple effects of dirt and enhanced details.

16. After applying the primer, apply the aluminum color.

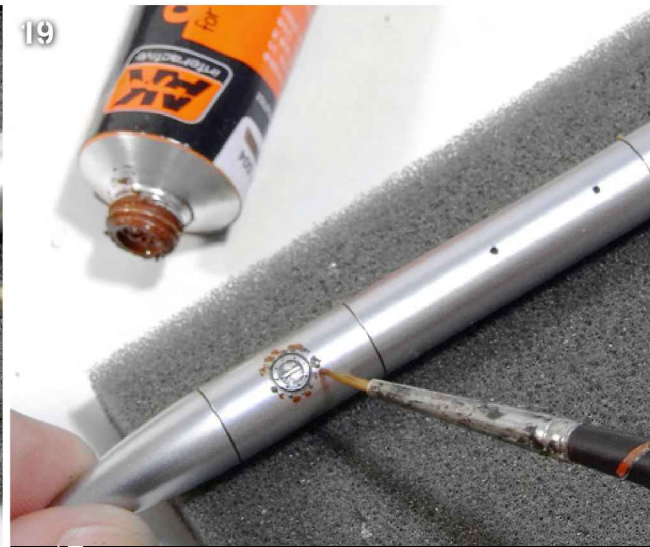
17. With the paint dry, use the Paneliner AK2071 to mark the panel lines.

18. Around the filling lids, apply a dark brown with an oil.

19. Then add another brown a little clearer.



18



19



20. Mix up both colours....

21. ....and shade them together outwards.

22. Look after the weathering process.

23. We mask the area of the filler caps and apply a coat of matte varnish.

24. Final appearance with the contrast between matte and shiny areas that enrich the finish of the pieces.

22



23 24





**DANIEL ZAMARBIDE**





**ITSVAN MICHALKO**



## 4.3.2. P-51D ENAMEL PAINTING (TAMIYA+ALCLAD)

In order to illustrate another example of metallic painting but this time with other products we will use the model of the P-51D 1/48 Tamiya, which is perfect for its high quality of details and also we will see a simple weathering.



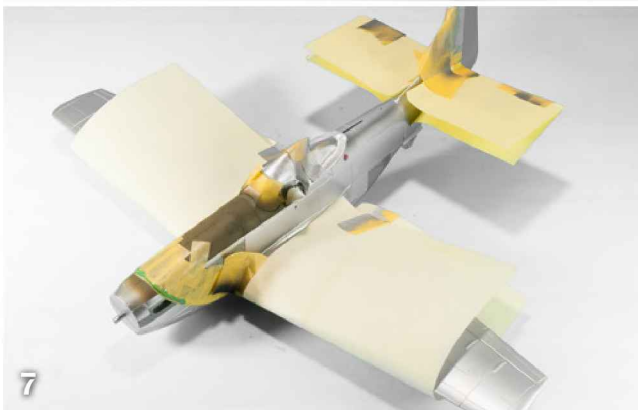
**TOMÁS  
DE LA FUENTE**

1. We start from the assembled model, with some improvements made in resin. With increasingly fine sandpaper until the 12000 grain leave a polished surface. Then thoroughly cleaned with isopropyl alcohol to remove any remains and prevent the paint to peel.

2. Then glue the front glass and paint it with glossy black X-1 from Tamiya after masking.

3. The plane was painted with an enamel layer of Tamiya X-11 Chrome Silver. This layer acts as a primer and can also use it to leave some parts exposed, although is not listed as aluminum color, it has a very fine pigment, which closely mimics a laminated metal.





4. The fuselage we paint it with aluminum color, which varies the tone and gives the impression of bare metal. Leave some areas in X-11 like the wings. The weapons covers and some panels are painted with Magnesium of Alclad II (LAC 111) giving a different touch to some panels. The flaps are painted with Dark aluminum.

5. The antiglare panel is painted with green olive Tamiya XF-58.

6. Here you can see how well the paint holds the masking process.



7. Mask again all the areas that are going to be painted in red.

8. We can see again the strength of the paint when masking, but remember, for this to occur the grease of the model has to be removed before any painting.

9. Then I varnished the whole model with Future, which protects and does not change the metallic luster at all.



10



11



12



13



14

10. Place the decals.

11. Detail of the hood area where we chipped enamel paint from Tamiya.

12. Overall Future varnish is applied to seal the decals and the paint effects. I applied two layers and you cannot see the difference.

13. After we use a wash the Dark Brown from AK (AK045) to highlight all the panel lines and give the aircraft more volume.

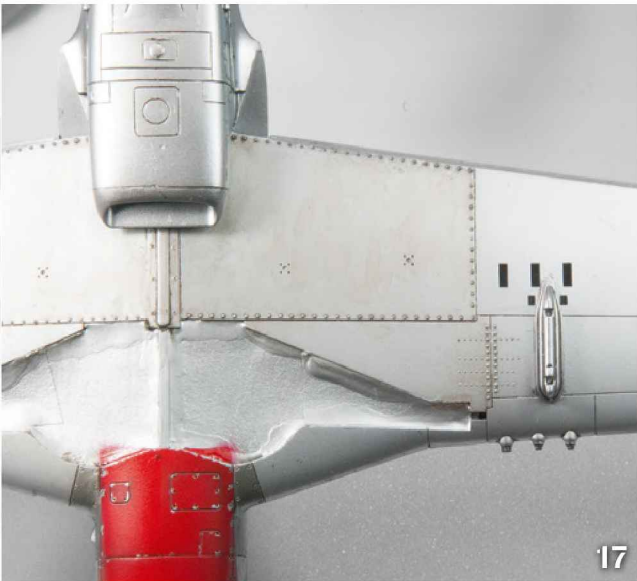
14. Once dry, it is cleaned with a dry, clean cloth in the direction of air flow, resulting very convincing as seen in this photo of detail.



15



16



17



18

15. In this picture we can see how good is the paneling.

16. We are of the theory that the aircraft, by the mere fact of being metallized should not be pristine, but also get dirty, to mimic the accumulated dust and dirt, apply a general washing water washes Vallejo acrylics.

17. In this picture we see in the central panel the effect of the wash.

18. Undercarriage were painted with the enamel matte aluminum Tamiya XF-16. The dampers were painted with Alclad chrome (ALC 107)

19. The auxiliary tanks received the same treatment as the rest of the aircraft.



19

Finally the model was varnished, this makes the model to become fully protected and with a very convincing finish.







IT'SVAN MICHALKO





# 4.4. INKS ON METALS

## ENGINES 1

The inks will react and tint the metallic paint without covering them completely, producing a glaze that accentuate depth effects, dirt or coloring, the metal may appear burned or weathered with colors like burnt metal...

1

Engine fully assembled and ready for the painting phase.

2  
After applying a base coat in black to detect errors in the joints or imperfections in the plastic and also serves as the basis to grip the paint properly in the further stages, then apply the color aluminum.

3  
At the end of the exhaust use dark aluminum and the conical base of the engine I apply a light coat of smoke colour using a clear dark brown ink.





4

With a clear blue color very diluted airbrush in the junctions of the various engine parts, especially in the upper part of the exhaust.



5

We repeat the process with a very diluted clear orange (it is necessary to dilute these colors a lot, despite being clear colors, they are very dark if used undiluted being greatly exaggerated the burning effects).



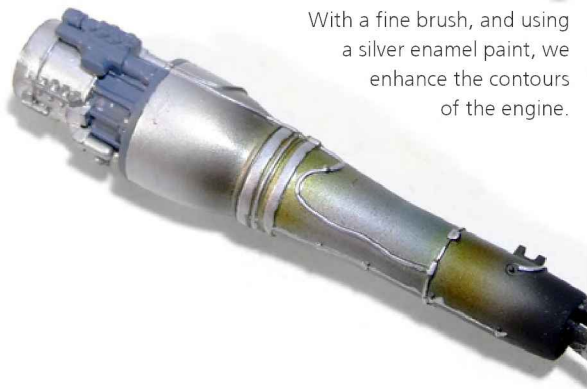
6

To give the sense of use, we created the blackish effect of a very burnt metal with black matte highly diluted and applied only in the lower part of the exhaust.



7

With a medium blue, we paint the upper part of the engine, the air intake part of the front.



8

With a fine brush, and using a silver enamel paint, we enhance the contours of the engine.



9

With the paint dried, and very carefully by freehand outline the reliefs in black or a very dark gray.



10

We sealed the entire process with a shiny polyurethane varnish highly resistant.



11

With a panel liner (AK Paneliner) mark and outlined all reliefs and once dry, shade out the product in order to create the effect of shadows.



12

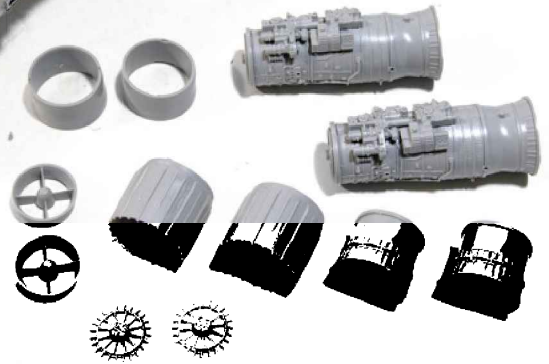
Finally, we apply a coat of satin varnish throughout entire the engine, with a little of graphite powder in the exhaust and applied a matte varnish applied in that part.

# ENGINES 2

In this second example we concentrate in the use of inks for realistic effects on burnt metal, as the best way to mimic it perfectly is to practice.



The different parts that make up the engine to apply them the proper paint separately.



Apply a base coat of black to all those parts that are likely to be painted with metallic colors.



3  
Paint the engines with dark aluminum (using normal aluminum give a very clean and unreal look for an engine being in use).

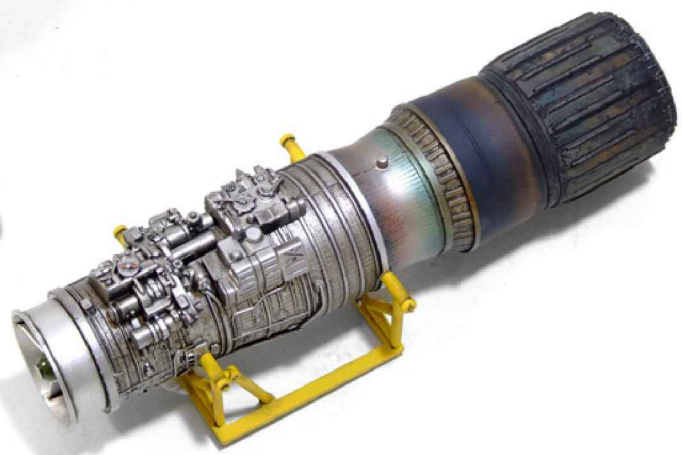


4  
The exhausts of the engines have been worked in this case with a weathering kit specific for this purpose.

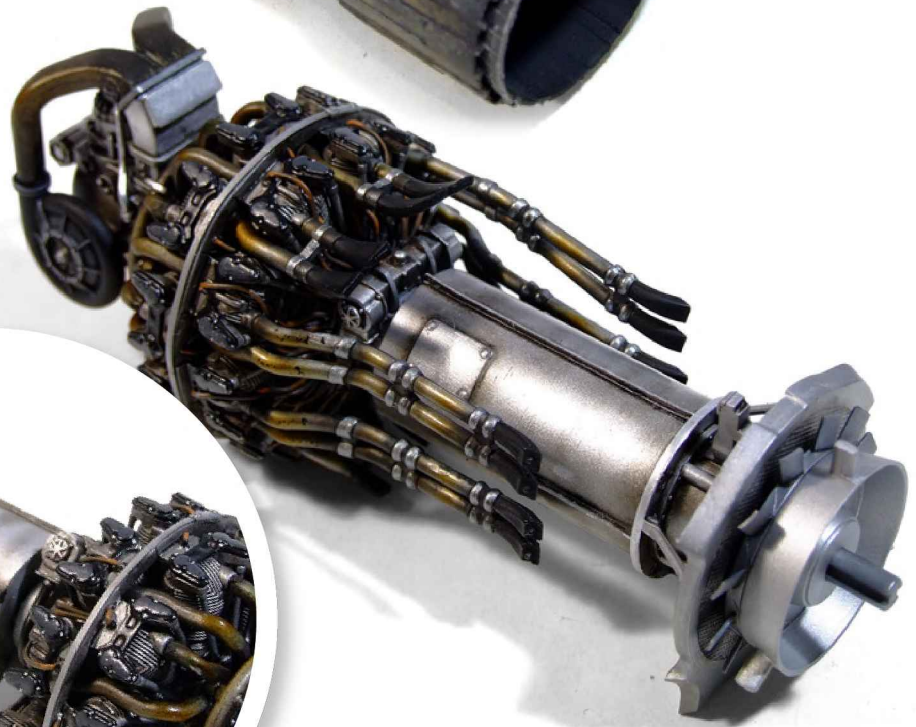


5  
The metallic paint are very resistant and can bear with any weathering products (in this case a wash in dark brown) without damaging it at all.

6  
Finally apply the latest touches such as the use of clear colors, red and blue highly diluted that mixed together layer by layer produce these violet tones typical of the burning metal.



Final result.





**JUAN CARLOS  
LARUMBE**



## 4.5. BARE METAL



### **METAL IMITATION WITH BARE METAL**

The bare metal are metal sheets of adhesive paper that are placed on the surface to become metallic and once adhered are cut with a sharp blade, resulting in a very real effect. These sheets are delicate to handle but once placed the result is very real.



**Bare-Metal**  
THE ANSWER TO A MODELER'S PRAYER  
NEW ADVANCED  
FORMULA

Gives your model that  
**REALISTIC** look  
GREAT FOR ALL CHROME TRIM  
ON MODEL CARS AND TRUCKS  
LOOKS LIKE METAL BECAUSE IT IS METAL™  
REQUIRES NO SPECIAL TOOLS  
ADHESIVE BACKED  
CONFORMS TO ALL CURVATURES  
ALL DETAIL SHOWS THROUGH

**B BARE**  
OF FOIL CO.  
1000 W. 10TH AVENUE, SUITE 1000  
DENVER, CO 80202  
(303) 733-4300 • (303) 733-4303

**Bare-Metal**  
THE ANSWER TO A MODELER'S PRAYER  
NEW ADVANCED  
FORMULA

our model that  
**TIC** look  
THROW THEM  
AND TRUCKS  
IT IS METAL™  
ALL TOOLS  
SO  
TURES  
OUGH

Tools needed to apply the Bare Metal.





2

Clean very well the surface where we will place the sheet, to avoid having any debris.



3

Cut a piece of bare metal that is large enough to cover a wider area than the one we want chrome and work comfortably.



4

Place it on the surface gently to avoid wrinkles as much as possible.



5

We begin to adapt it to the surface. Using the handle of a brush or a blunt tool to avoid damaging the sheet.

6  
We finished integrating it with a cotton swab gently until it completely acquires the volume wanted.



7  
Using a sharp knife cut the surplus, helping us with the trim line and without pressing too much to avoid damaging the paint, for this is very important that you use a new blade.



8  
Slowly remove the excess of bare metal once it has been cut.



9  
Finally we rub gently on the adapted bare metal just in case there is any lifted edge after using the blade and to finish integrating it completely.



# BARE METAL EXAMPLE ON OTHER SURFACES

The bare metal is not only used for car parts, exhausts etc, it can also be a very good resource in other parts we want to emphasize. We will show how to highlight some letters on a base.



1 Tools we are going to need.



2 Base on which we will make the effect.



3 Choose the bare metal most similar to the one to reproduce: aluminum, chrome, etc.



4 We cut a big enough size to handle it easily.



5 We adapt the metal sheet carefully...



6 ... and wrap the volume completely.



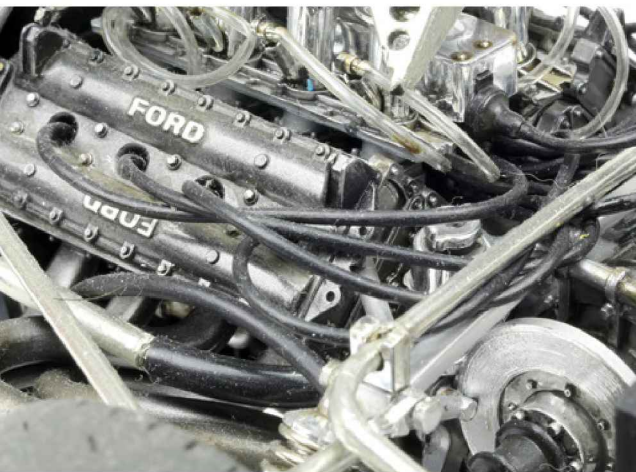
7  
Once the volume wrapped, cut the excess.



8  
Finally we rub with a soft cloth to finish integrating the sheet.



9  
The Bare Metal leaves a very realistic result.



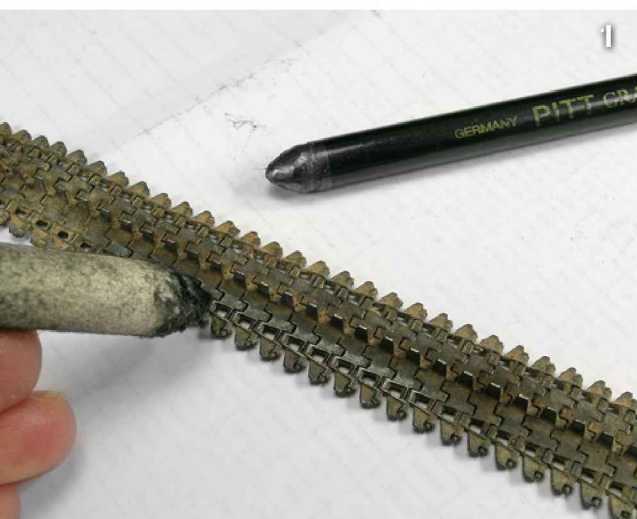
Ford letters have been reproduced with a bare metal sheet.



In this picture we can see also the effect of two exhausts once applied the bare metal

## 4.6. GRAPHITE PENCILS

Graffiti in pencil are great resources for small parts, especially to accentuate and highlight partially the wear parts of a metal piece by rubbing. The perfect thing is that the mine is a little greasy so that when rubbing it leaves that metallic look. It has the advantage of being highly controllable because literally we write over the piece or slip the graphite mine through an area, plus they are readily available in any art crafts or fine arts store.



1



2



3

1. With a fader for technical drawing we can spread the effect.

2. Thanks to the ease of use and control we focus only in the areas where we want the effect.

3. In the tracks we use it on the more exposed areas which a polished metal look.

# 4.7. METALLIZED COLOUR PAINTS

The metallized paint is characterized by showing small glitters as if there were tiny metal shards, which makes a more vivid color.

Metallized automotive paints usually consist of a base layer with a clearcoat or topcoat of urethane to add protection and brightness.

The metallized paint also known as polychromatic or "metal flakes" is mostly used in automobiles. When approaching, small metal shavings included in the painting create a glittering effect.

There are two common variations rare metallized paints: the paint pearlescent or pearl effect, having subtly different colors depending on the angle and intensity of light incidence; and polychromatic paints, which change the colors dramatically depending on the angle at which you look like purple to orange, for example.

There is also one final variation, which is very difficult to see on cars but often used on bicycles and motorcycles, called "flamboyant" or "apple candy".

This consists of a base layer of silver metallic but covered by a colored translucent lacquer or urethane.

This type of paint provides a strange effect of depth. The metallized paint can be applied directly in

modeling with sprays starting the paint flow ahead of the model with smooth and continuous movements to avoid drops, we can also pouring paint into a glass to airbrush it more accurately. We may also use paints made with metallic tones and, in both cases you should use a white or gray prime to give more light to the colors especially reds and yellows.

If we want to complicate it a little more we can use bilayer paints as we can see in the following example, in the next pages.

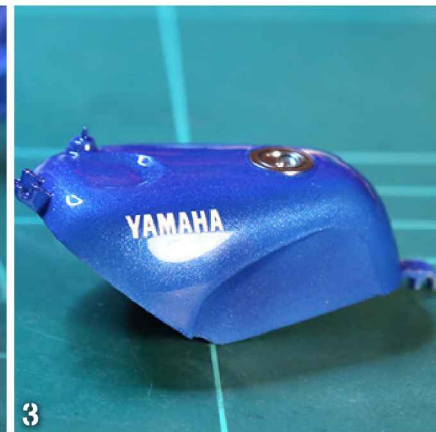
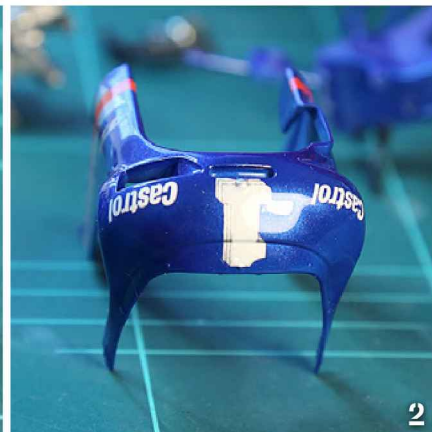


## 4.7.1. YAMAHA TZ250

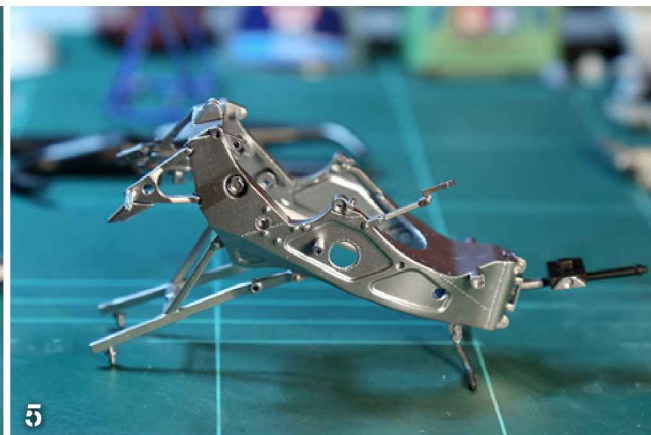
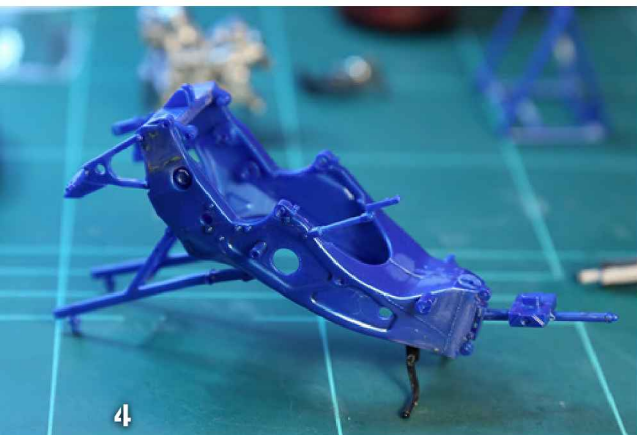
On this bike we will see better how to apply these metallic colors and we can see some examples that will serve us as inspiration. Handling these paintings is simple as any other paint, but a bit more delicate. We chose a two-coat varnish to increase the shininess, but the monolayer paint also gives us enough shininess as well. We'll see how using different products of several brands for effects on civilian vehicles.



**OSCAR COFRADE**

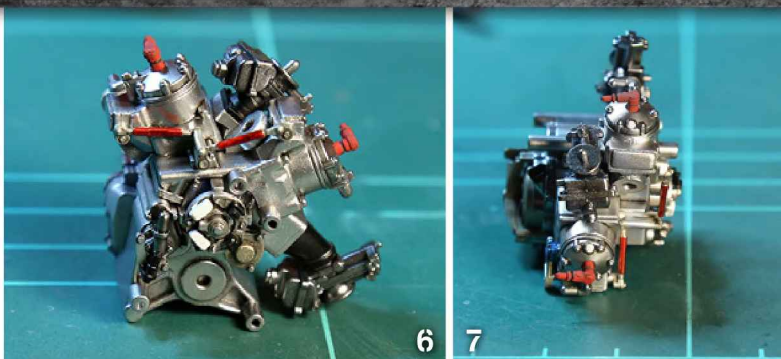


1-3. Fairings after applying automotive lacquer U-Pol and polish it. It can be used any other metallic paint.



4. 5. Chassis with the factory chrome removed (left) soaking it in bleach, and chassis after being painted with enamel aluminum color (right).

- 6-7. Engine.
- We use colors as usual.
- Lara aluminum for the block.
  - Steel from Larafor the butt.
  - Titanium yellow linkages for controlling carbs, with parts in transparent red AK.
  - Housing clutch with burnt metal pale Alclad II.
  - Cover of the gearshift Alclad II chrome.
  - Carbs in gun metal Alclad II.



8. Exhausts.

For the exhaust pipes, being a bike that has them very dark and showing no weld marks, I chose a base color in gun metal with the parts who suffer greater thermal warming, such as the exhaust manifold and in the part next to the aluminum sheathing, painted in hot metal violet pale and burnt metal, fading them with airbrush. The aluminum sheathing is an adhesive metal sheet of bare metal.



9. Front fork.

To paint the front fork has been used Lara aluminum color, and a layer of orange varnish from Tamiya for the outer area of the suspension, and copper-colored from Tamiya for the inner stem. The clip has been painted in pale burnt metal.



10-11. Metallic weathering.

When we simulate metal parts there is the drawback of being very shine and give the sensation of shallow, so it is appropriate to apply certain washes to help appreciate reliefs. We see as a wash in dark brown tone, normally used for military modeling (in this case one for green vehicles) helps us to highlight some areas applying it to the engine and chassis welds. It has been chosen this dark tone and no tone motor dirt because we want to be very thin lines to define well the contours.





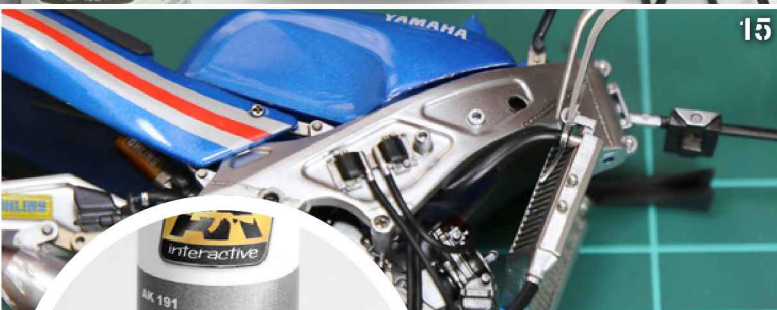
12. In the case of the welds, as we do not want them too marked, once dry clean it to remove the excess product.



13. Radiator:  
The radiator is treated with aluminum Xtreme base color, its fine pigment gives a sense of continuous metal. To play with depth in this piece has been chosen as dirt effect the Engine Grime from AK, unlike in the engine, here the surface to darken is greater, and therefore, we want a lighter tone, the feeling of dirt between the radiator.



14. In the engine we will increase realism applying in certain areas some fuel effects, exaggerating some effects will enhance the model and give visual richness, just if we want it to be an eye catcher.



15. Clamps.  
There are in the market for non-specific modeling products but provide us some details, for the clamps cut in thin strips of aluminum tape provides us the detailed hose clamps of the bike.



16. Plastics.  
It is important to play with the contrast of shiny parts with the one without, such as plastic parts, the glossy varnish from AK or any other brand provide us with a very good appearance. To simulate these parts, I chose a wheel black Gunze color, which is actually a dark gray, gives better results than pure black.

17-19. Metallized on the body. It is very important to make a good finish for the body, and perhaps the part that strikes at first sight, this has to be pristine. Priming is very important, it serves as base color to unify the tones between the fillers and plastic, and provides a bonding surface for the paint.

Moreover the color, in this case we use Zero Paints for being paints specially designed to be bilayer, it has no shine, and a protective lacquer is required which will give that shininess. Finally the lacquer, there are numerous modeling sprays of several brands like Zero Paints, Number 5 or from the automotive world, in this case we use a two-component from U-Pol, and for a caramel like finish use an airbrush of 0.5 mm applying the product in several passes.



17



18



19



20



21

21-22. Polishing.

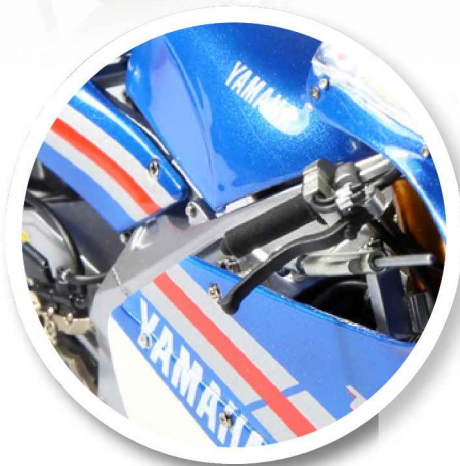
It is an important part of the process, the paint once dry, it stretches, but often not enough, and not being in a completely dust-free environment as in the case of spray booths for cars, usually falls some speck. First use sandpaper fine grain water, in this case 2400 grain first and then 4000, until a uniform smooth matte surface, taking special care not to reach the paint near the edges. Then using cotton rub the polishing liquids, first with a medium polishing liquid and later with a fine one, gradually see how the surface brightness increases. Finally, for the mirror effect, it is applied using a ultrafine grinding Beret 3M to polish at the least possible speed, in this case 5000 rpm. And this is the end result that the body shines as much as possible.



22 23



22-23. Detailing.  
There are aspects that we can detail to the bike using a gravure for the hardware. Another very simple detail is sanding the tire, thus the center mark of the mold is removed, and a more realistic texture is generated.



# 4.7.2. CAR GALLERY



OSCAR COGRADE





**FERNANDO  
VALLEJO**



# 4.8. PAINTING CHROME

Chromo is one of the most delicate colors, here we will see how it is also likely to be treated and weathered to enhance even more its impressive result.



1-3. The preparation must be even more careful, if possible, because this color will show up any fault or imperfection.





4 5



6 7



4-7. A shiny black base airbrushed is a perfect support for this color, it is convenient to handle the parts without touching them to avoid fingerprints and allow to dry thoroughly.

8

8-11. We cover the black base with fine layers, patiently, trying not cover at the first go.

9



10 11





12

Once the chrome is applied the model looks spectacular, but still not very real.



13

With inks, in this case smoke highlight the cracks and some volumes in the engines.



14

With kerosene simulate losses in some of the engine joints.

Over this color washes will be very selective care not to touch other areas, because the color would lose brightness.



15

16

Airbrush ink selectively to create some shadows.





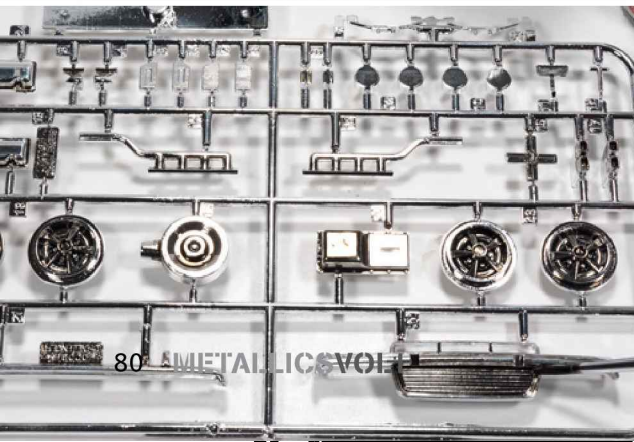
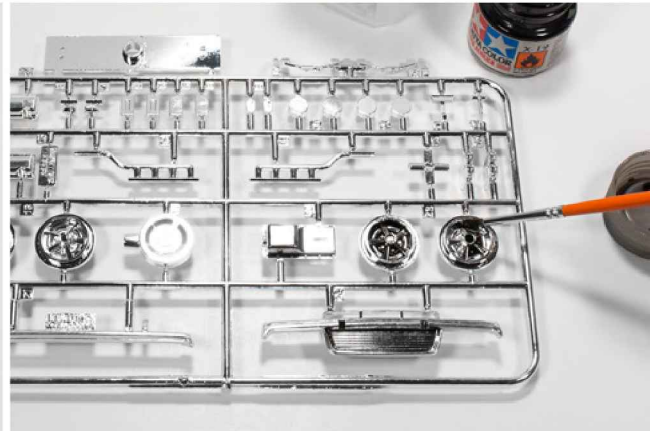
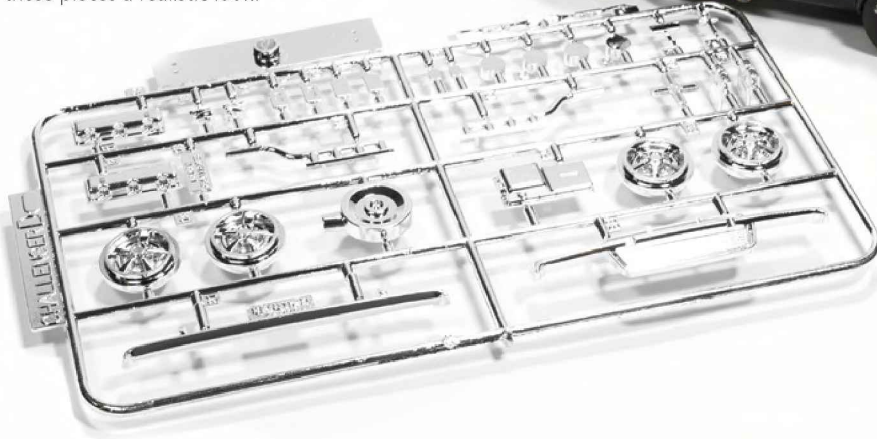
Final appearance with the contrast of the inks.



The colors of the space ship are now much more realistic and attractive with this simple process.

## 4.8.2. PAINTING CHROME CLIPS

Chrome is one of the most delicate colors, we will see here it is also likely to be treated and weathered to further enhance its appearance. With this simple technique, starting from the chrome clip, with a smoke color from Tamiya we will give these pieces a realistic look.



Chrome is one the most delicate colors, even at the cost of losing some of its luster in the same clip paint with this transparent paint that does not fully cover it.

As we can see from the photos the color smoke is getting into every corner and enhancing the volumes, the pieces have no longer that unreal look.



in this finished Shelvu we can see how the chrome parts have been treated with this technique, this is its final appearance.



Here we see how it is likely to be treated and aged to further enhance its impressive result.

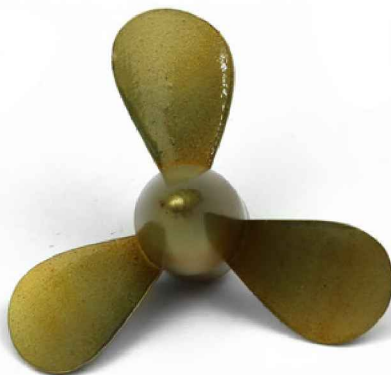


In this example the transparent smoke color has been used in a more diluted form to make a chrome look that gives an appearance of a newer model.

# 4.9. SHIP PROPELLER

Propellers may be of many types, including aluminum, stainless steel, bronze, or composites. The bronze and stainless steel are the ones that offer the best performance and durability against time, and are very suitable for ships that move at high speed. A perfect propeller should weigh the lesser, be as rigid as possible and not be altered by the sea environment and be able to be repaired easily. Therefore a very suitable material, if it were not for its high price and its difficulty to work and repair it would be the titanium which is totally immune to oxidation, light.

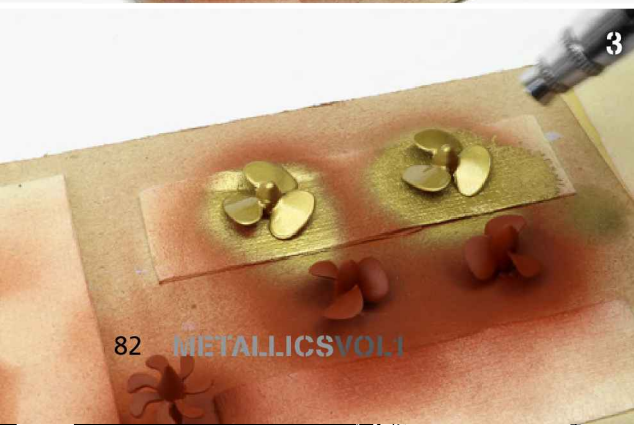
Moreover the bronze is the most used material of propellers and in this example we will deal on how to paint them in a different way. With a permanent ink marker diluted and airbrushed, but that color is normally in any catalog of paints from any manufacturer.



1



2



3

1. We have given a prime layer for the paint to better grip and resist.

2. We extract some paint from the pen to dilute it with white spirit as it is an enamel paint this tone is very similar to bronze and later will treat it.

3. Airbrush the ink marker paint.

4. Transparent inks, as we have seen, are perfect to achieve effects in metals. In this case we start with the orange.

5. After we insist with blue selectively on the edges and joints.

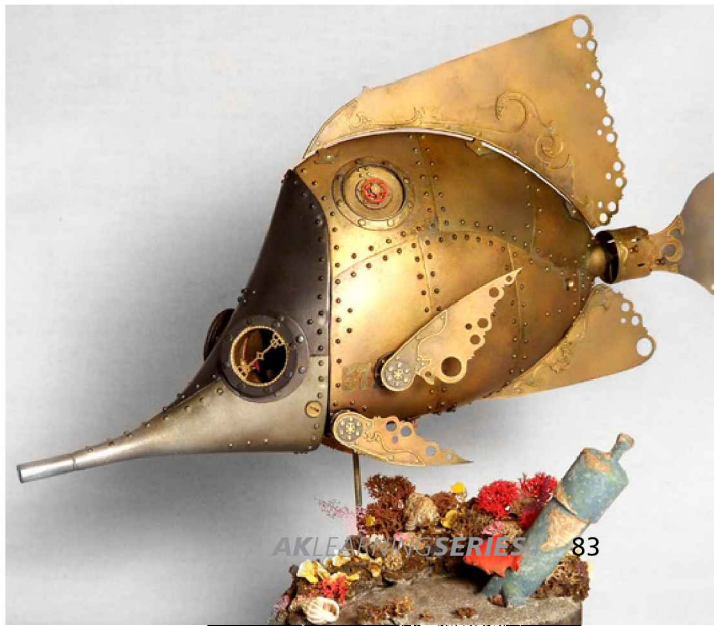
6. Appearance of the propeller with the inks applied.

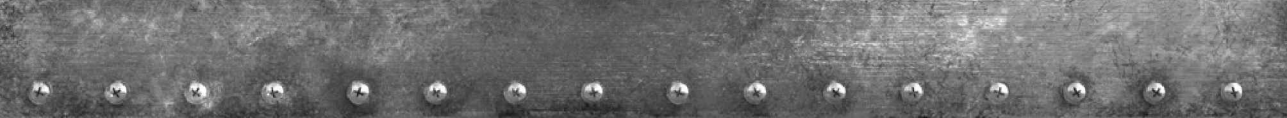


With a blue greenish filter AK4162 we make a selective wash which will add a lot of realism to the set.



In these other examples we see the contrast of the several metals applied and their weathering effects.

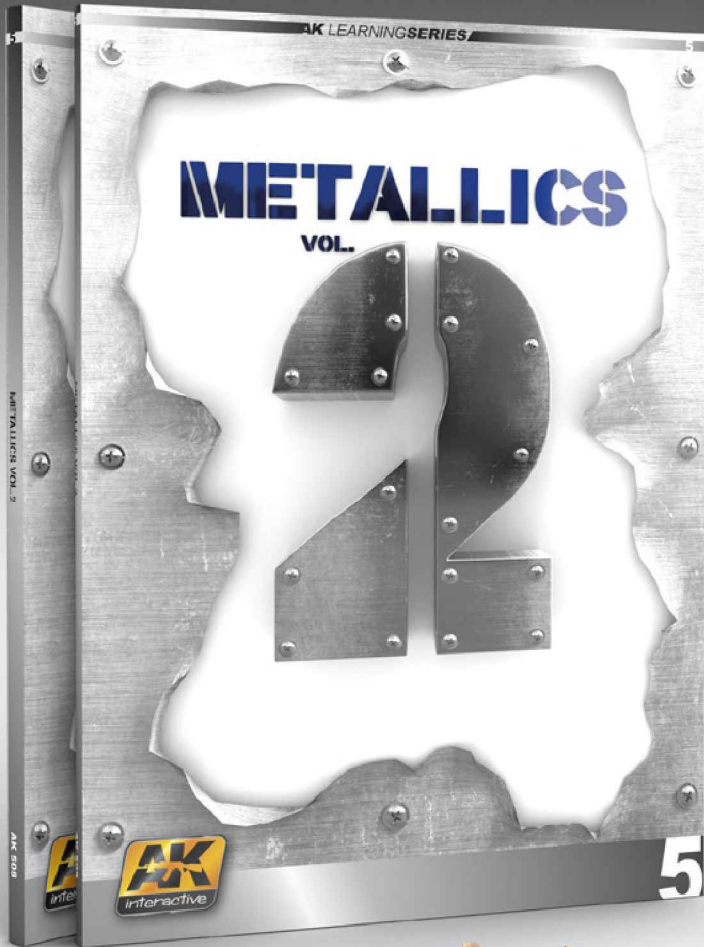




## AK508 AK LEARNING SERIES 5 METALLICS VOL. 2

Metallics have always been a hard task for all modellers. It does not matter which modelling brand you choose, at some point you will find yourself in front of a metal piece/part, which, of course, you will want it to be as much realistic as possible.

In this second volume we will show you different techniques on how to paint metal on historical and fantasy figures. How to apply properly for example painting without metallic paints and many different ways to achieve realistic metal finishes.



There exist many ways to achieve a metal finish from the use of enamels, to waxes and bare metal sheets. In these two volumes dedicated to metallics inside the AK Learning Series talented artists take you on a journey through the difficult tasks of mastering metallics.

AK Learning Series: Metallics volume 1 & 2 are the definitive resource to understand metallics in scale modelling.



[www.ak-interactive.com](http://www.ak-interactive.com)  
Phone: (+34) 941 44 52 28  
[info@ak-interactive.com](mailto:info@ak-interactive.com)



[YouTube](#)

Metallics have always been a hard task for all modellers. It does not matter which modelling branch you choose, at some point you will find yourself in front of a metal piece/part, which, of course, you will want it to be as much realistic as possible.

There exist many ways to achieve a metal finish from the use of enamels, to waxes and bare metal sheets. Inside these two volumes dedicated to metallics inside the AK Learning Series talented artists take you on a journey through the difficult tasks of mastering metallics.

In this first volume we will show you how to understand metallic paints and how to apply them properly with the right products. Also techniques and tips which come in handy when sometimes we feel stuck. We will see examples applied on aircrafts, engines, vehicles, afv's and detailing on all kinds of models.

AK Learning Series: Metallics volume 1 & 2 are the definitive resource to understand metallics in scale modelling.

