



# "STICKY FINGERS"

## IPMS HORNCHURCH - NEWSLETTER

Hello Members

It is good to return to England after my 17 day holiday with relatives in Brisbane, Queensland Australia. The travelling time is always about 26 hours, but the distance never gets any shorter, which ever way you go. Our flight was in a Boeing 747-400P by Malaysian Airlines from London Heathrow Airport to Kuala Lumpur and then on an wide bodied Airbus A-330 to Brisbane and the same in the reverse direction.

Whilst out there I found a cracking model shop called Hobbyrama at Aspley, which is the district my brother-in-law lives. On the counter I picked up an entry form for the 1997 Queensland Scale Modelling Championship, which out there they call the Queensland Model Hobbies Expo. This is held at Downey Park in Brisbane on October 11<sup>th</sup> & 12<sup>th</sup> 1997. Sorry you're too late it's gone by !

I also managed to get hold of a magazine for July 1997 called "Plastic Modeller", this is the same as our SAM or Scale Aviation Modeller. A couple of days later I was able to pick up the August/September edition of the same magazine. I am prepared to let club members have sight of the mags provided they are returned to me as soon as they have read them. Also the IPMS newsletter, again I want them back as soon as you have read them.

My brother-in-law and his son have some very good computer equipment, which includes access to the Internet, as a result of reading these magazines I found a web address for "Panzer Colours" both inside and outside the tanks. He put the code into the net and out came a 5 page info sheet of "Panzer Colours" for Panzer II to Panzer VI in minute detail. I have the 5 pages printed on their machine and brought them home to England. *(I can copy this if required provided it is not a duplicate of the info I have printed and brought along tonight - Ed)*

My next door neighbour visited their daughter who is lecturing in Berlin, Germany. On a recent trip there they went to the "Luftwaffe Museum" at Gatow, and they brought back a museum brochure, but unfortunately it is written in German, however there are a couple of good photos. On the good side I have a translation into English entitled "RAF Gatow - New Museum of the Luftwaffe", by Reimar Wendt. There is a list of the planes in the museum and 8 black & white prints of some of the aircraft. I have not read any of these yet, but again I am prepared to let club members have a read/look provided they return the to me.

I sincerely hope the Barking exhibition was a success on the Sept date, I was away. No doubt I shall learn your feelings on the day in general and whether we should consider it in the future if there is a repeat in 1998.

**KEN**



# *PANZER COLOURS*

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This page is for the use of modellers wishing to build replicas of German tanks of World War II. The colours of these vehicles have long been in dispute; most vehicles in museums have been repainted since the war. Hilary Doyle and Tom Jentz are working on a definitive book which uses the original Army orders and manufacturers' paint references of the period, to define and date the exact colours which were used. Mr. Doyle has kindly allowed some of their findings to be published here, largely concerning the interiors of the vehicles, which have long been unknown.

### **Paints and numbers**

German industry pioneered the use of standards. One of them was the RAL colour system, which is still in use. However, its range of colours was changed in 1953 and only sources from before that date should be used. Almost every colour used in Panzers was a numbered RAL colour; in a few cases, colours were used before being added to the RAL list. The actual paint cans carried a different numbering sequence, but Army documents specify the mapping to RAL numbers.

### **Variations from standard**

Paint on Panzers was applied in a very thin layer; the underlying primer showed through to some extent. Besides this effect, there may have been variations of colour within a single RAL number due to manufacturing inconsistencies; this is still a matter of speculation. However, we can assume that these were very small. Documentation shows that all aspects of the manufacture of Panzers was done with characteristic German thoroughness. Once a vehicle had been out in the open for months, its paint would probably have discoloured, but the effects of dust and mud could be even more severe. It is well known that in the later stages of the war a certain few camouflage colours were applied in the field after being diluted, so great variations in their appearance are possible.

### **Primer**

During manufacture, all German armoured vehicles were initially painted in a dark brown-red rustproof primer, RAL 8012 (the notion of using red primer on all machinery is a part of German engineering culture). Some have argued that there were two shades of primer in use, because references mention both red and red-brown; Mr. Doyle has found that both of these descriptions officially trace back to the same RAL 8012.

On the finished vehicle, the engine compartment was usually left in this primer colour, the only exception I have seen to this was an early Tiger 1, where engine and radiator compartments were grey-green (see below). The primer would also show up on other unpainted areas, e.g. probably under the hull, and sometimes on the rims of hatches, or turret rings - but only if the red paint was actually inaccessible when the hatch was closed or the turret bolted in place during painting. The German painters were typically thorough, and in a dubious case, they would overpaint this red colour rather than leave it alone, especially early in the war. Examples of thoroughness; the upper surface inside the nose of early Pz3 and 4 was overpainted; (but I have seen a late Stug3 with the internal frame surrounding the commander's hatch left in red, though the hatch and roof were not).



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This red primer was apparently the initial colour of the tracks, but it would soon wear off them during driving. Photos of a Panther factory show the tracks painted a dark colour but already having shiny steel cleats after driving a few yards around the concrete. Tracks were made of steel with a high manganese content, so the metal was dark with a brown tinge where it was weathered.

### The two official interior colours

For the first part of the war, and probably before the war, the official paint scheme for tank crew compartments mandated that the red primer be completely overpainted. There were two colours used; a yellow colour called Elfenbein (Ivory) for the upper part of the compartment, and a grey-green colour for the lower part.

Elfenbein was RAL 1001, which is a light lemon yellow colour. However, we have found only one vehicle which seems to have had this colour inside, a Panzer 4 from early 1941. Although no record of a change has yet been found, it seems that the interior colour was changed to a light beige after that time. Several vehicles have been found with similar beige colours inside, and the Panzer 4 mentioned above was repainted beige, probably when it was upgunned.

The grey-green colour was RAL 7009. Mr. Doyle had the opportunity to compare some of this, on the Bovington Tiger, directly to the wartime RAL colour reference card: even after 50 years it was extremely similar.

### Equivalent modellers' paints

RAL 8012, red primer: I have not yet made an exact match; Humbrol 113 is close but the RAL colour was darker. RAL 7009, grey-green: Humbrol 115 is an almost perfect match RAL 1001, ivory: this is the same hue as Humbrol 74, but slightly paler. Add one part Humbrol 41 to about four parts of Humbrol 74. The unknown beige colour; I matched that in the Tiger 1 by mixing equal amounts of Humbrol 41 and Humbrol 71. However we can't be sure exactly what it looked like.

**FINISH:** this was between matt and gloss. A similar finish can be obtained by overpainting with Humbrol Satin Cote (can these people spell?)

**WEATHERING:** looking at photos of interiors, I am struck by how every piece of equipment has subtle signs of use; paint is worn off handles, corners and edges leaving them dark, upper surfaces are oily or have obviously been stood on, etc. No piece of equipment seems to be precisely the same colour as its neighbour, thanks to wear and tear. Floor panels are so oiled and dirty that it's difficult to tell their original colour. In the most heavily worn parts of the floor, the raised ridges of the pattern are reflective metal.

### Interior colour scheme

Although we don't have many measurements of colour, we have quite a few photographs of vehicle interiors. In the lower interior of the tank, the grey-green covered just about everything.

Transmission boxes and other modules, which were perhaps manufactured separately, were ordered to be delivered in grey-green. Torsion bars, levers, transmission shafts, floor panels (yes, top AND bottom surfaces) storage boxes, etc. were painted uniformly grey-green. In late 1942, the manufacturers were ordered to stop using the grey-green paint, and leave the bottom of the tank in



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its original red primer. Wherever grey-green had been used, red would appear instead. This was definitely a step backwards in terms of ergonomics - the red paint was quite dark. However, Mr. Doyle has found plenty of surviving vehicles proving that this order was obeyed. Sometimes he finds a red lower area with a grey-green transmission box or turret motor, because such items were stockpiled for some time before use.

Within the upper, Ivory part of the interior, all items of what I would call "working machinery" were painted black. This includes MG mounts, movable handles, vision ports, gearboxes and handwheels, etc. Also, it seems that every equipment stowage point was labelled, by hand or later with decals. In both cases the writing was black and had no background.

In September 1944, an order went out to stop using the Ivory paint and leave the tanks entirely red inside. This seems like sheer idiocy, but there are surviving Panthers and Hetzers with 100% red interiors. Other simplifications were being made to tank manufacture at the same time - Zimmeritt was discontinued, for example. There were loud complaints, and at the very end of 1944 the Ivory paint was officially reinstated.

The main gun of a Panzer would usually be painted Ivory along with the rest of the interior. Most German tank guns followed a very similar design, which brought out several working levers and switches on the right hand face of the breech block; this face was left as unpainted steel, presumably well-oiled with light machine oil. The interior of the breech block was also unpainted steel, as was the large lever with a round housing on the bottom right side of it; but most of the breech block was Ivory.

The boundary between the Ivory and the other colour (red or grey-green) on the inside was somewhat arbitrary. Examples that I have observed are given here; Turrets; all Ivory inside, but turret floor the other colour. Legs supporting the turret floor were typically painted in both colours, with a cut-off line carefully painted exactly at the level of the inside turret rim; this is called "lack of imagination". For the Pz3 and Pz4; ivory on side and rear walls right down to the floor; floor, ammo bins and transmission unit the other colour; also the other colour on the lower side walls right at the front. The dividing line in the Pz3 and Stug3 was a convenient slanting strut beside the driver, in the Pz4 it was an imaginary vertical line just inches forward of where the drum brakes cut the hull. Tiger 1; the bottom of the sponsons was used as the boundary, and an imaginary 'waterline' ran across the back wall at this level, dividing Ivory from the other colour. This division is easily visible in photos. In the Tiger II it seems that the sides were completely ivory, and the other colour was used only on the floor, except on the nose plates where it was 'waterlined' halfway up the upper plate.

Sheet-metal stowage boxes on Panzers were apparently always painted in a nearly-matt black. After being bolted into place, they would be overpainted just like the rest of the tank; however, if they had lids, their interior would retain the black colour. This applies to boxes both inside and outside. The large turret storage bins apparently followed this scheme too. Seats and protective headpads seem to have been always in black leather, or black rubber in the case of the smaller protective pads. Electric junction boxes were typically black, but apparently there was one in the turret painted a dull pale blue colour. This colour was also applied to a small box on the front of the engine wall, and the small-but-crucial firing safety switch (a rectangular box about 10cm long, on the upper right side of



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the breech block). These blue boxes were standard fittings, nearly identical in all panzers I have seen. The larger electric cables were in unpainted (grey?) woven metal sleeves, or they were run through tubular guides which were painted just like the surrounding area.

The crew hatches of a tank are frequently left open in the field, and the last thing you want your enemy to see is a large ivory circle in the midst of shrubbery. So, the insides of crew hatches were painted in the base exterior colour during manufacture. However, they rarely LOOKED like the exterior - the outside would be dusty and faded, or repainted or camouflaged, and the inside of the hatch would retain factory-fresh paint. As for vehicle engines, Mr. Doyle has "never found one where you could tell the original colour". But it is known that semi-gloss black was the major colour on Maybach engines.

### Xtracolour paints

The changes made to the RAL colour scheme in 1953 have thrown us all into some confusion. Mr. Doyle has now unambiguously identified all the colours used before 1943, and is close to identifying the last few. I would have liked to match Mr. Doyle's findings against a modern colour standard, or against all the available ranges of modelling paints; but this would have taken quite a long time, and also he wishes to retain some information secret until the book is published.

What he has allowed me to do, is take paints manufactured by Xtracolour, who are a specialist UK brand aiming to reproduce historical colours, and compare their Panzer colours to the definitive references which he has discovered. Here are the results. Where I say "very good match" I mean that the difference is tiny and could, in all probability, occur between different batches of paint. Where I say "quite wrong" I mean that in my opinion the RAL paint could not have had this appearance even after weathering.

Xtracolour 800 = RAL 7021 = Panzer Grey  
Very good match. A little too dark

Xtracolour 801 = RAL 8002 = Signalbraun (prewar)  
Quite wrong.

Xtracolour 802 = RAL 7016 = Anthracitgrau  
Not close - too dark.

Xtracolour 803 = RAL 8000 = Grünbraun (North Africa)  
Quite wrong.

Xtracolour 804 = RAL 7008 (North Africa)  
Not available for testing

Xtracolour 805 = ?? = Dunkelgelb (dark yellow)  
Quite wrong. Use Xtracolour 809 for Dunkelgelb, see below.

Xtracolour 806 = RAL 6003 = Olivgrün (late war)  
Very good match. Should be perhaps a little lighter & yellower.



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Xtracolour 807 = RAL 8017 = Schokoladebraun (late war)

Close match. Needs to be a little more red. But of course, this colour and RAL 6003 were often applied in the field, in such a way as to alter their darkness considerably.

Xtracolour 808 = RAL 8020 = tan yellow (for North Africa)

Not a close match.

Xtracolour 809 = RAL 7027 = sand grey (for North Africa)

This is not a close match to RAL 7027, but it's a perfect match to RAL 7028 Dunkelgelb.

Xtracolour 818 = ?? = German tank interior colour

This is nothing like RAL 1001. It resembles the beige colour inside the Tiger 1 at Bovington, but a better match can be obtained by mixing paints as I as described above.

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