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De Beer Refinish goes green for Australian Collision Repair Expo

In April, the De Beer Australasia team took part in the Australian Collision Repair Expo. The expo held over three days was located in Darling Harbour, Sydney in combination with the Auto Aftermarket Expo. All the major paint providers were there on display - with Waterbase being the buzz of the show.

De Beer Refinish launched the VOC compliant offering into the Australian market. Both the WaterBase 900 Series and BeroThane HS420 3000 Series will now be available in Australia & New Zealand, a sign of the 'green' movement that is spreading throughout the automotive repair industry worldwide.

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De Beer WaterBase 900 Series in extreme conditions

After our first visit to Toyota Bicutan Manilla in January last they gave us the opportunity to train the painters and colour matchers to familiarize them with waterborne paint products.

Although the humidity (80-95%) and the temperature (28-34°C) were very high, the drying time was still acceptable (8-12 min) using a mobile drying system. In Europe it's normal to increase the temperature up to 35 degrees to speed up drying time. But in these extreme conditions in Manilla, where most of the booths don't have a burner, it is necessary to create movement in the airstream so the moving air can absorb the moisture. That means without a mobile or fixed blow dry system it is impossible to dry waterborne paint within an acceptable time. In general when the temperature rises above 30 degrees we advise to use thinner 9-161 (slow). However in these humid conditions thinner 9-151 is sufficient. We sprayed ten different colours and repairs such as spot repair, panel repair up to the whole side of the car.

Although the conditions were extreme, the colour matching was within the specifications of Toyota. In some colours it might be necessary or useful to change the application from two coats wet on wet to a single layer system (drying between the layers) to speed up the drying time.

How does a spray booth work and why do we need a good booth?

Spray booths have been around for years but with recently more highly developed paints we have to make sure that the spray booth works well. We will go through the basics of the operation before we will go deeper into the theory.

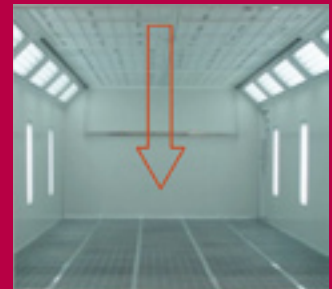
In the spray booth we have an air-movement, which is important to get rid of the overspray, which is produced while we are painting. Airflow will also determine how fast paint will flash off. Nowadays it is even getting more important as more and more countries are using waterborne and High Solid paint systems.

In general there should be an airflow of 0.25 - 0.3 mtr/ sec. depending on the legislation in your country. So every second the air moves 25 - 30 centimetres in the direction of the exhaust. If the internal height of a spray booth is 3 meters how long does it take to refresh the spray booth? That is an easy one isn't it?

- 3 meter internal heigh: 0.3 meter/sec. = 10 seconds isn't it?

Lets calculate how much air goes through a spray booth per hour:

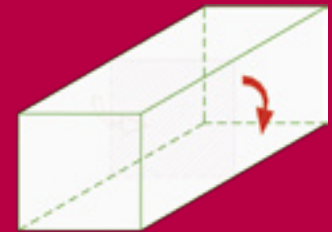
- Down draft spray booth, so the air is blown in from the ceiling filters and the exhaust is on the floor, through the filters, see picture:
- Width of the booth: 4 meters
- Depth: 7 meter
- Requested airspeed: 0.3 mtr/sec.
- Seconds in an hour: 60 min. x 60 sec. = 3600
- 4 mtr x 7 mtr x 0.3 mtr/sec. x 3600 sec. = 30.240m³/hour



Semi down draft spray booth: the air is blown in from the ceiling filters and the exhaust is in the backdrop. The air more or less moves in the horizontal direction in the booth see picture below.

If we now calculate how much air goes through this booth the calculation is based on the frontage of the booth. So width x height.

- Width of the booth: 4 meters.
- Height: 3 meter
- Requested airspeed: 0.3 mtr/sec.
- Seconds in an hour: 60 min. x 60 sec. = 3600
- 4 mtr x 3 mtr x 0.3 mtr/sec. x 3600 sec. = 12.960 m³/hour



So as you can see, a semi down draft is a lot cheaper to make:

- No floor filters
- No raised floor or pit construction
- Engines can be smaller as less m³ of air are needed
- Burner can be smaller because you need less air

In general a spray booth has two engines, which are in balance, an intake-, and an exhaust engine as we call them and the spray booth has in most cases a very small over-pressure. In the United Kingdom that is not allowed so you will see every booth has a slight under pressure to avoid overspray getting outside of the booth. In other countries you will see a slight over-pressure to avoid dust and contamination getting into the spray booth.

To find out what you have got is easy, switch the spray booth on and keep the door 4 - 5 centimetres open, if the door closes automatically, you have got an under pressure booth. When you have a positive pressure booth try to close the door with very little pressure and you will find more resistance, the door is pushed out, over pressure!

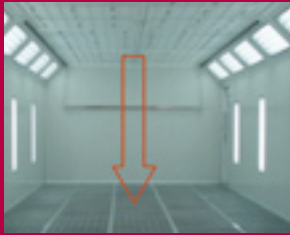
Various engines are used:

Centrifugal fans: those are the most common ones as they have the right air capacity and also don't run at very high speed, to keep noise levels down.

Axial fans: those are displacing far less air and running at a higher speed, causing the spray booth to be very noisy.



Some cheaper spray booths operate with only one engine to save cost. Single engine type (most commonly installed in the intake) will have a strong positive pressure on the doors if you switch on the spray booth, so it is hard to close them. If the doors are closed the air will be pushed outside through the filters, which you will find, on the floor, sidewall or on the end wall. (see pictures)



Down draft booth, with dry floor filters



Side extraction semi-down



End draft spray booth, cross flow booth

This time, we have limited it to airflow and fans in spray booths. In next newsletters we will tell you about burners and try to elaborate a little bit more on spray booths and how they work. We hope that this helps you for now. If you have questions or comments, please don't hesitate to contact our colleague Martin Ruigrok, Technical Manager, De Beer Australasia, email: martin@debeer.com.au

How to ensure good weighing results

Accurate weighing is essential for a good paint mix. But no weight measurement is absolutely perfect! A number of factors may influence weighing results and directly impact your work. What can you do to maximize your productivity and quality?



Location

Scales for mixing paint are sensitive enough to register weight changes far below 1 gram. This also makes such scales sensitive to other external factors. Many forces applied to the scale can be registered as a potential weight change. While the scales use software filters to reduce the influence from external vibrations, it is still recommended to place the scale on a level and stable surface.



Also the scale should be shielded against airflow caused by fans or open windows and doors. Direct sunlight and big temperature changes can also have an influence on the weighing result and should be avoided. Be sure that nothing close to the scale can block the free movement of the pan!



Maintenance and correct use

The load cell inside the scale is well protected against overload and shock. However you should still avoid applying unnecessary stress like closing paint cans with a hammer on the scale. The scale should be kept as clean as possible: Wet paint on the pan or dried residues jamming the free movement will impact your weighing result. The pan is made of stainless steel and can easily be removed and cleaned.



Calibration

All scales are factory calibrated. To ensure accurate measurement, a frequent check of the scale is recommended. This can easily be done using a test weight. Be sure to zero the scale before applying the test weight. If you register a weight deviation, check for level stand and clean the pan. If the problem persists, please contact your local Valspar partner.



Multi angle visual assessment and colour measurement

Our automotive colour laboratories make use of a spectrophotometer to formulate new colours. Because of this new colours can be developed much faster. Especially the combination of human colour expertise and the colorimetric accuracy has proven to give the utmost fast and robust formulae. End users more and more use the spectrophotometer. For solids very successful but also the development of metallic colours goes better and better. Therefore it is the right moment to look deeper into how we can translate multi angle measurements to visual assessments, starting by the basics on how to watch colours.

To see a colour we need 3 factors: A light source, an observer and an object. To evaluate a colour in a consistent manner we have to take care that those 3 factors have been standardized as good as possible. For solid colours a one-view angle is (mostly) sufficient to evaluate but for metallic and other effect colours the colour shifts between various angles. One should keep in mind that the above 3 mentioned factors (light source, observer, object) are essential for the determination of the angle. To standardize light and angles

we use a colour evaluation cabinet with at least one daylight bulb installed at a fixed location at the colour labs.

The angle can be changed by either turning the object (image 1) or by fixing the object and changing our position (image 2)

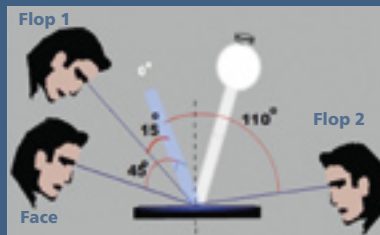
We clearly see on image 3 that inside the multi-angle spectrophotometer the situation of the observer (as seen on image 2) is being copied exactly. The observer has been replaced by 3 sensors fixed on 15, (or 25) 45 and 110 degrees towards the reflected light beam (specular).

Nowadays it is very common in the world of automotive paints to name the visual viewing angles according to the law of colourimetrics. Face: 45 degrees from specular, Flop 1: 15 degrees from specular, Flop 2: 110 degrees from specular.

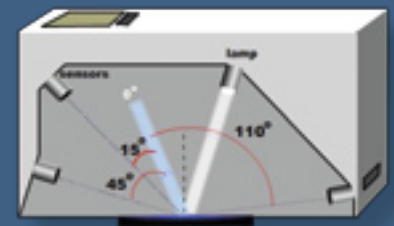
The software that comes with a spectrophotometer takes care of the rest: A complicated script calculates the colour coordinates (LCH) for each angle using day light values, eye sensitivity values and object reflection values (light source, observer, object).



Im. 1 Turning of the object with regards to the light source



Im. 2 Change observers position

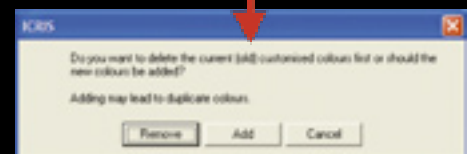
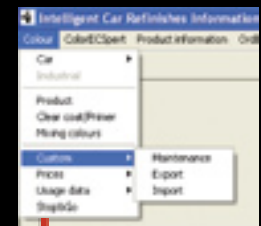


Im. 3 Inside the Spectrophotometer

ICRIS Custom database changes

In ICRIS 6.7 you will now have the possibility to add formulas besides the formulas that are already in your custom database. In the past formulas would have been replaced.

When you decide to import data into ICRIS you have to choose the "import" option. When you choose this option you have to select the location you want to import the formulas from. Select the file with the custom data and click "OK". Following screen will appear when there are already data in the custom database:
Now you can decide if you want to remove the old formulas or if you want to add the new formulas to the old ones.



Colour code	Colour name	Year	Month	Update nr.
0000	BRONZE ORANGE	1998	01	0
0001	BRONZE ORANGE	1998	01	0
0002	BRONZE ORANGE	1998	01	0
0003	BRONZE ORANGE	1998	01	0
0004	BRONZE ORANGE	1998	01	0
0005	BRONZE ORANGE	1998	01	0
0006	BRONZE ORANGE	1998	01	0
0007	BRONZE ORANGE	1998	01	0
0008	BRONZE ORANGE	1998	01	0
0009	BRONZE ORANGE	1998	01	0
0010	BRONZE ORANGE	1998	01	0
0011	BRONZE ORANGE	1998	01	0
0012	BRONZE ORANGE	1998	01	0
0013	BRONZE ORANGE	1998	01	0
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0015	BRONZE ORANGE	1998	01	0
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0095	BRONZE ORANGE	1998	01	0
0096	BRONZE ORANGE	1998	01	0
0097	BRONZE ORANGE	1998	01	0
0098	BRONZE ORANGE	1998	01	0
0099	BRONZE ORANGE	1998	01	0
0100	BRONZE ORANGE	1998	01	0

BOX update swatch nr.

Box update

In the colour selection screen as depicted below you can see that another column has been added. This column is called "box update". In this column you will see the number of the update swatch where you can find the chip you need when the colour box has not been updated. The swatch nr. consists of three numbers. The first indicates the update number; 0 stands for the initial release of the colour documentation; 1 for the first update etc. The second number is the year in which the update was released and the third number indicates the month of release.