

Drying Alkyd Based Coatings: Which Combination of Metals Will Give The Best Performance? An Overview of DriCAT[®] CV and DriCAT[®] 2700F Series, and Duroct[®] Strontium 24%/18%

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Overview

- **Drying Alkyd based coatings – which metals should I use?**
- **Cobalt / Calcium / Zirconium has been the standard go to combination for many years.**
- **What to use when there are usage restrictions?**
- **Are there more active metals / combinations?**
 - I'll show you the best options in the market.

Overview – What Will Be Covered

- **High activity catalyst technology for the complete replacement of Cobalt.**
- **Combining active technology with cobalt to work as a partial replacement of Cobalt.**
- **Using overbased Strontium as an alternative to Zirconium.**

Replacing Cobalt

- Dura Europe S.A.U. offers two alternatives to customers:
 - Full replacement of Cobalt by using the **DriCAT 2700F series** of Manganese and Iron based products
 - Partial replacement of Cobalt by utilising aspects of our activated Manganese technology in combination with a reduced level loading of cobalt – **DriCAT CV series**.

The Products

DriCAT® 2700F series

For solvent based

- **DriCAT® 2753F** – manganese
- **DriCAT® 2730F** – iron

For water based

- **DriCAT® 2756FW** – manganese
- **DriCAT® 2735AQ** – iron

DriCAT® CV series

- **DriCAT® CV120** – for Cobalt 12%.
- **DriCAT® CV100** – for Cobalt 10%.
- **DriCAT® CV60** – for Cobalt 6%.

DriCAT[®] 2700F series – The Pros and Cons

Pros

- Manganese or iron based
- Very high activity catalysts
- Can be used singularly or combined
- Products for solvent and water based coatings
- Reduced loss of dry
- No negative effect from added water
- No restrictive carcinogenic legislation
- Improved whiteness / colour retention

Cons

- Adjustments to co-driers required to maximise performance.

DriCAT[®] CV series – The Pros and Cons

Pros

- Cobalt based
- Direct w/w replacements for all the standard cobalt grades.
- No need for any changes to the loadings of the co-driers
- If cobalt driers are classified as Carcinogenic 1A / 1B the low cobalt content of the driers will allow coatings formulations that do not require carcinogenic labelling.
- Improved whiteness / colour retention

Cons

- Cobalt based - If cobalt driers are classified as Carcinogenic 1A / 1B the CV products will carry the new classification.
- Can suffer loss of dry when water is in the coating formulation

Replacing Zirconium

- **Duroct[®] Strontium 24% and 18%** are the most effective technical and cost alternatives to Zirconium driers.
 - Functionally more active driers.
 - Improved drying performance is observed.
 - In **DC2700F** technology and Cobalt driven systems.
 - A reduction in loss of dry.
 - Strontium is a non-toxic alternative.
 - Overbased Strontium shows primary activity.
 - Overbased Strontium may replace Calcium.



Evaluating the Effectiveness of the New Products

**DRYING TESTS USING BECK-KÖLLER DRY
TIME RECORDERS**

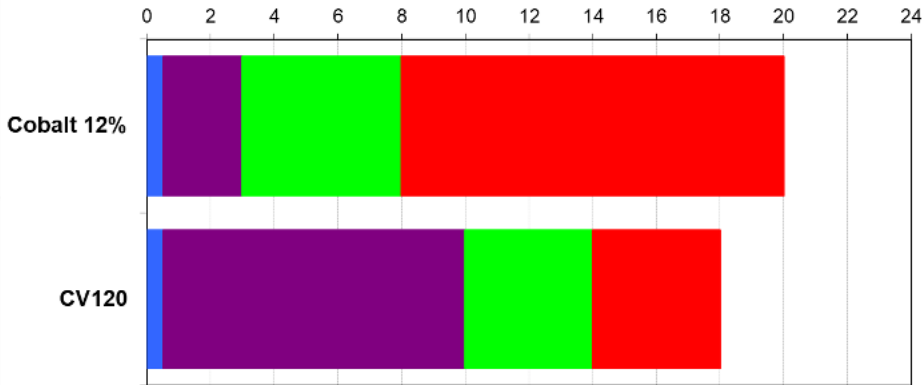
DriCAT[®] CV series Drying Test Evaluations

- **DriCAT[®] CV120** w/w for cobalt 12%.
 - Calcium 10% and Strontium 18% used as co-driers
- No other changes to the paint formulations.
- 22°C and 50% humidity.
- Short - long oil alkyd based systems.
- Whites and blacks.
- Loss of Dry assessed.
- Cold temperature testing.

Long Oil Alkyds*

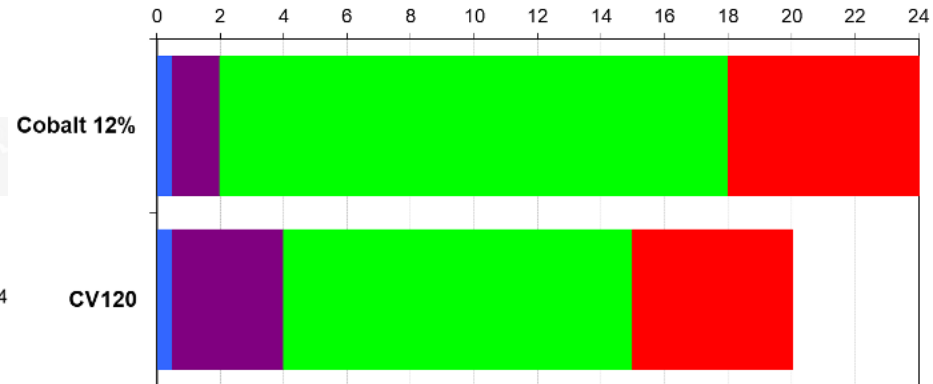
Long Oil White Alkyd

Drying Time (Hrs)



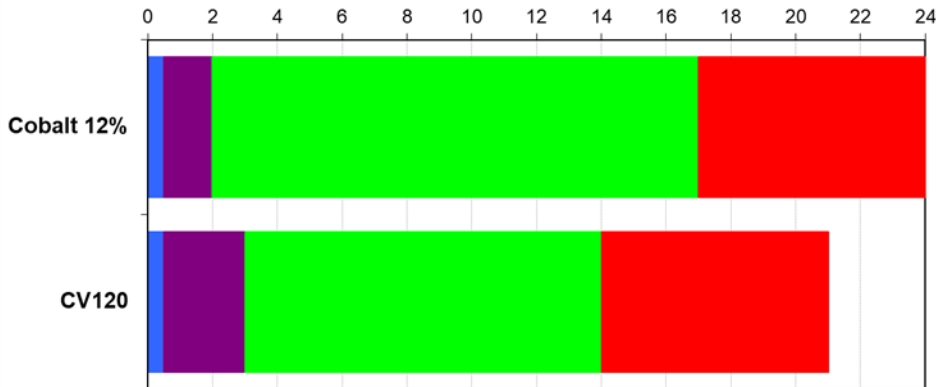
Long Oil White Enamel

Drying Time (Hrs)



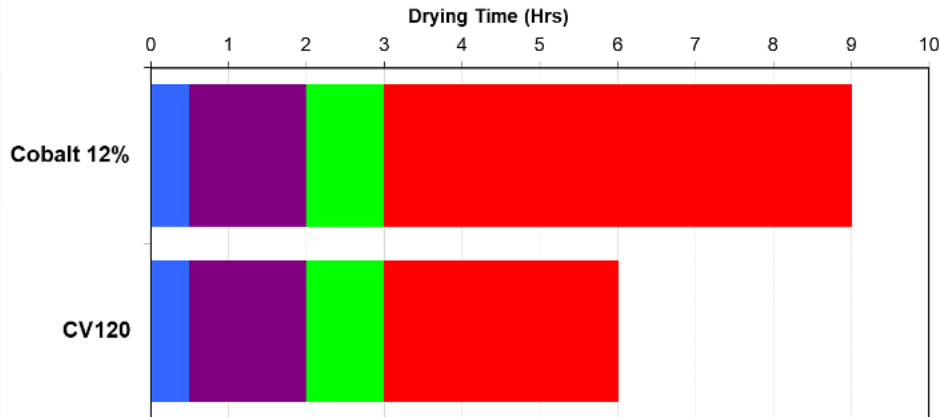
Long Oil Black Enamel

Drying Time (Hrs)

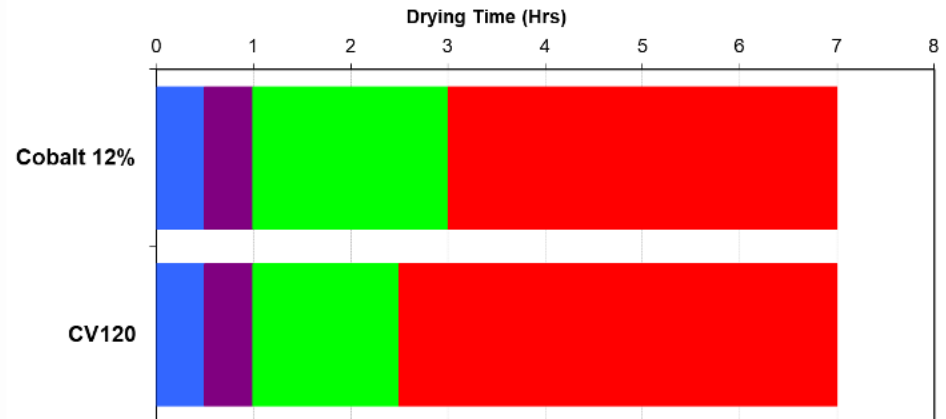


Short Oil Alkyds*

Short Oil White Gloss

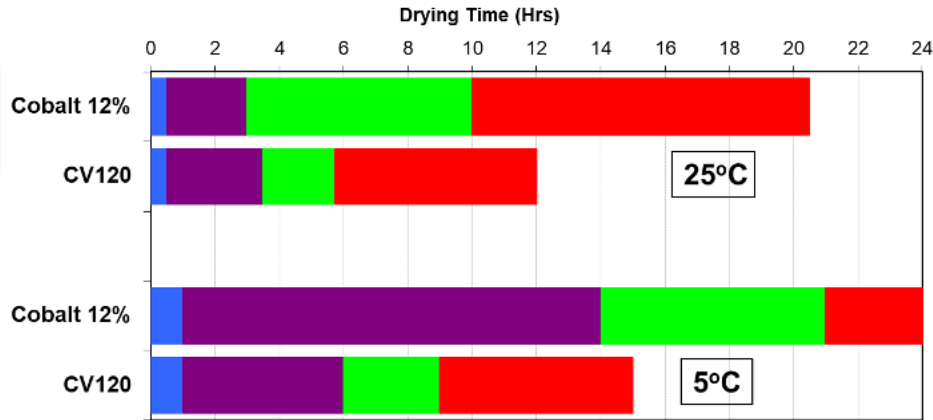


Short Oil Jet Black Gloss Enamel

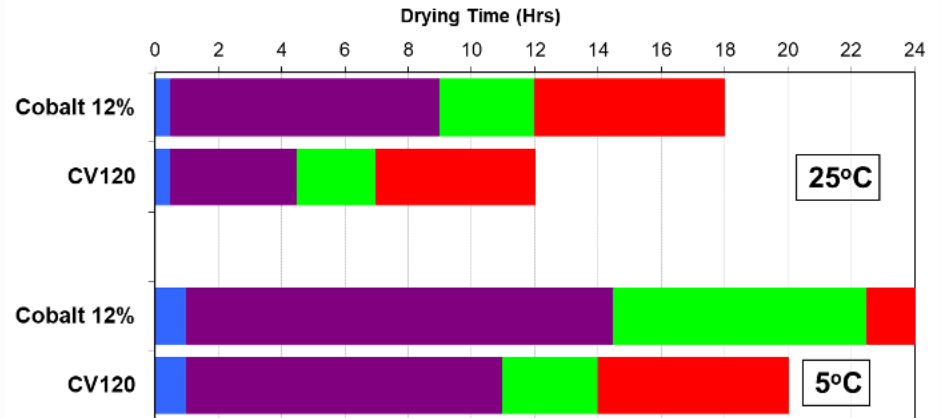


Low Temperature Testing*

Long Oil Alkyd White Gloss

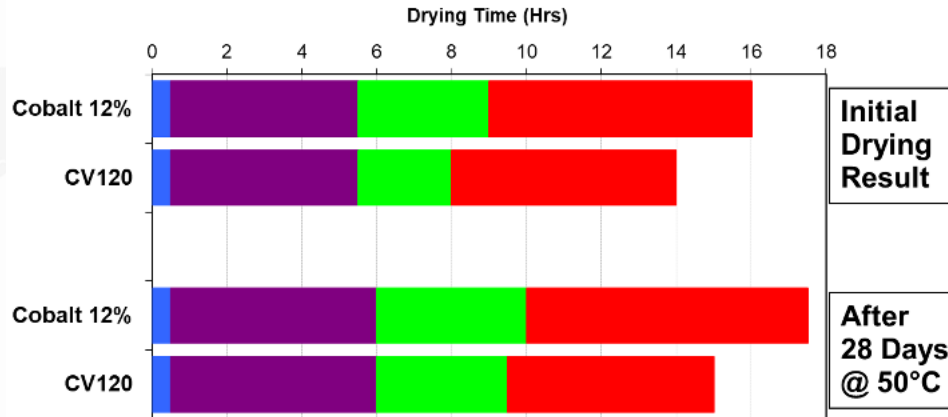


Long Oil Alkyd Black Gloss

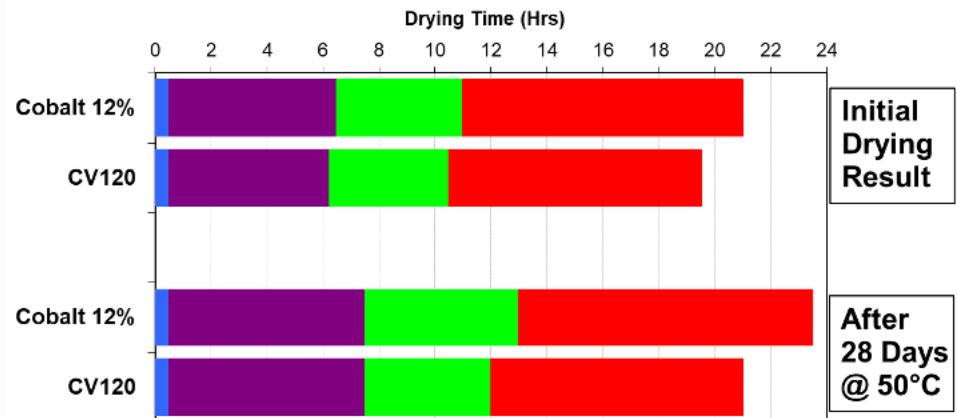


Loss of Dry*

Long Oil Alkyd White Gloss



Long Oil Alkyd Black Gloss

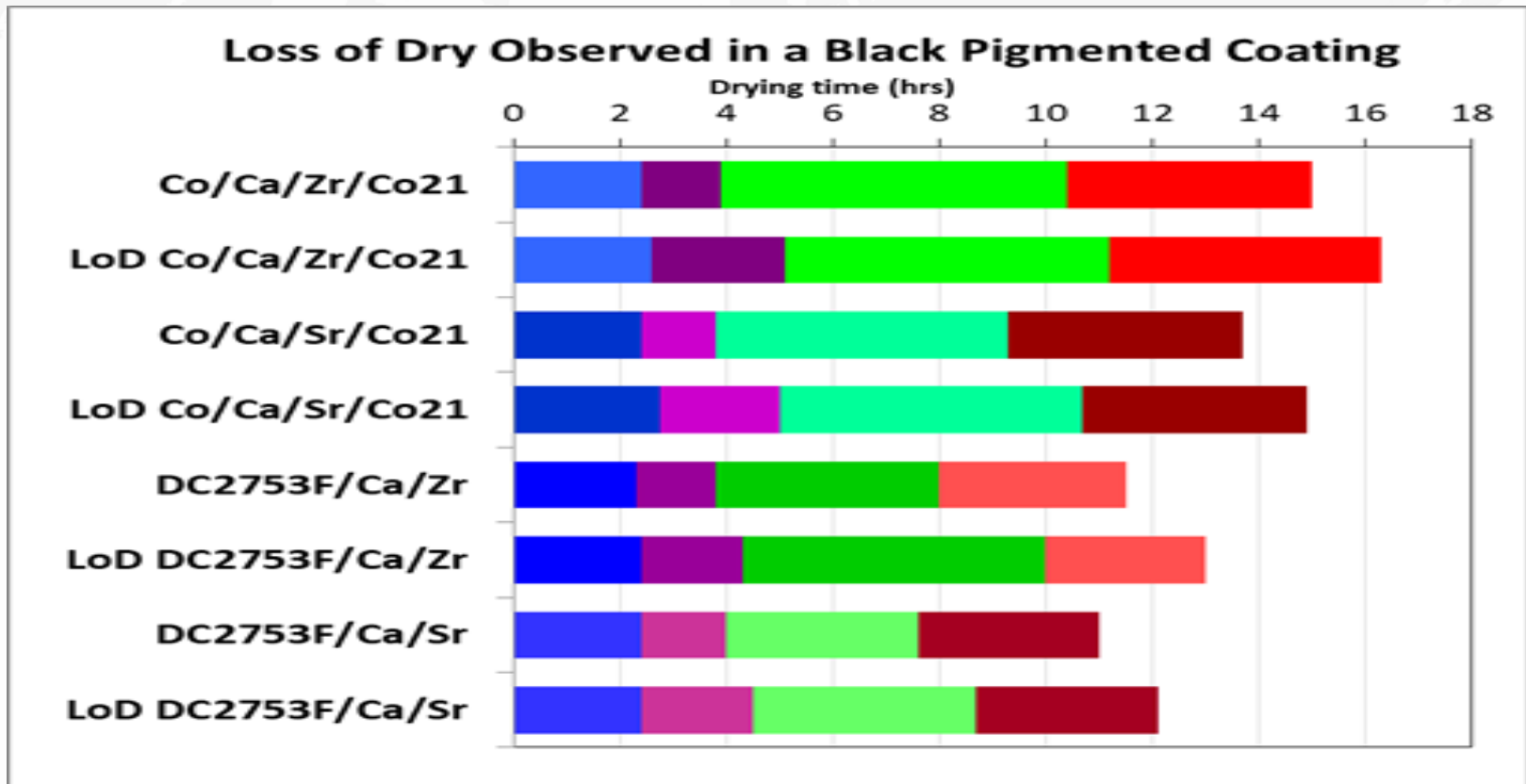


DriCAT[®] 2700F series Drying Test Evaluations

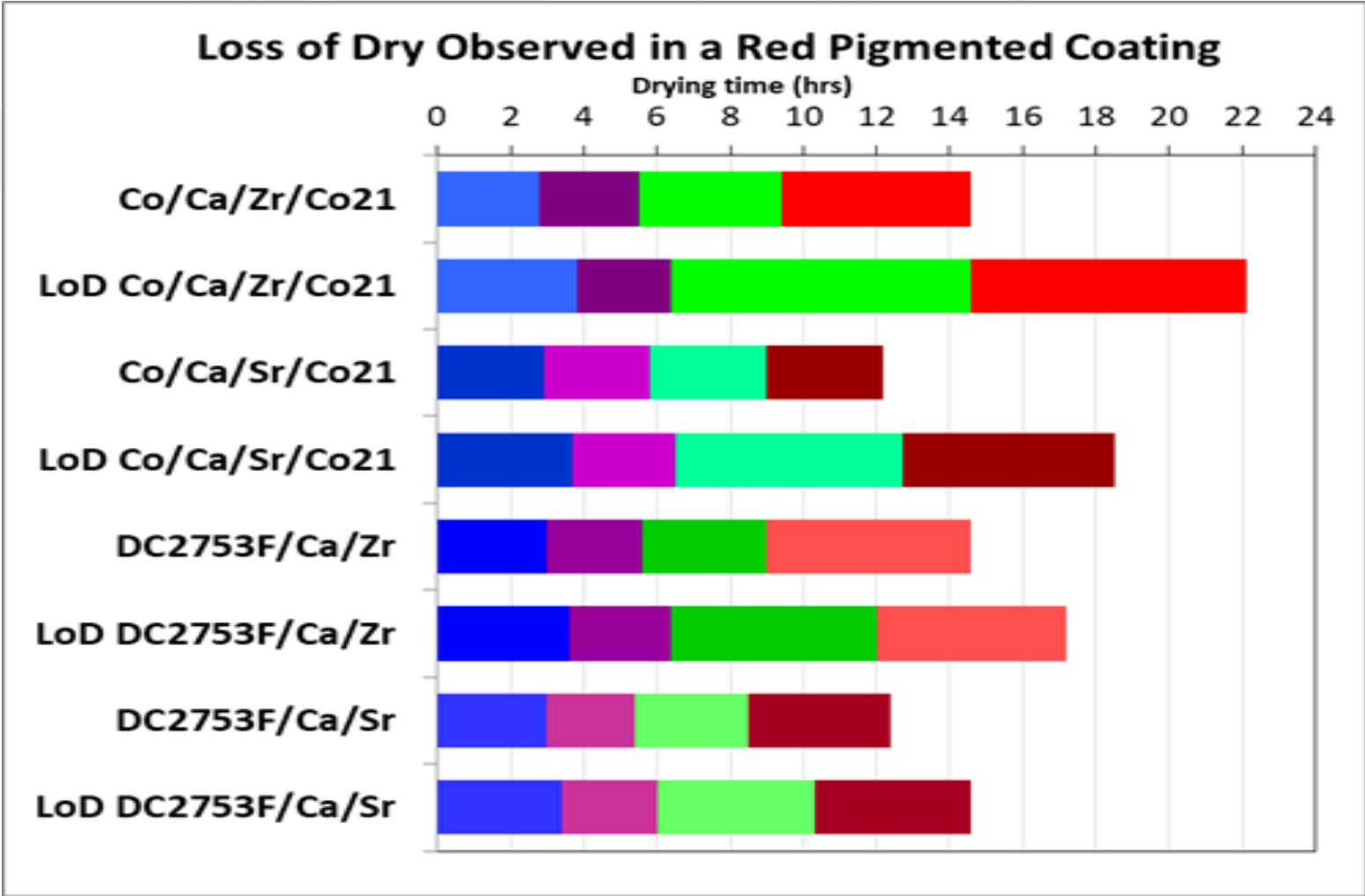
- **DriCAT[®] 2753F w/w for cobalt 10%.**
 - Calcium 10% level raised by 10%
 - Strontium 18% reduced by 25%
- **No other changes to the paint formulations.**
- **22°C and 50% humidity.**
- **Long oil alkyd based systems.**
- **Dark Colours**
- **Loss of Dry assessed.**

Improved Loss of Dry – Black Pigment

- As **DC2700F series** products are highly complexed there is a reduced loss of dry

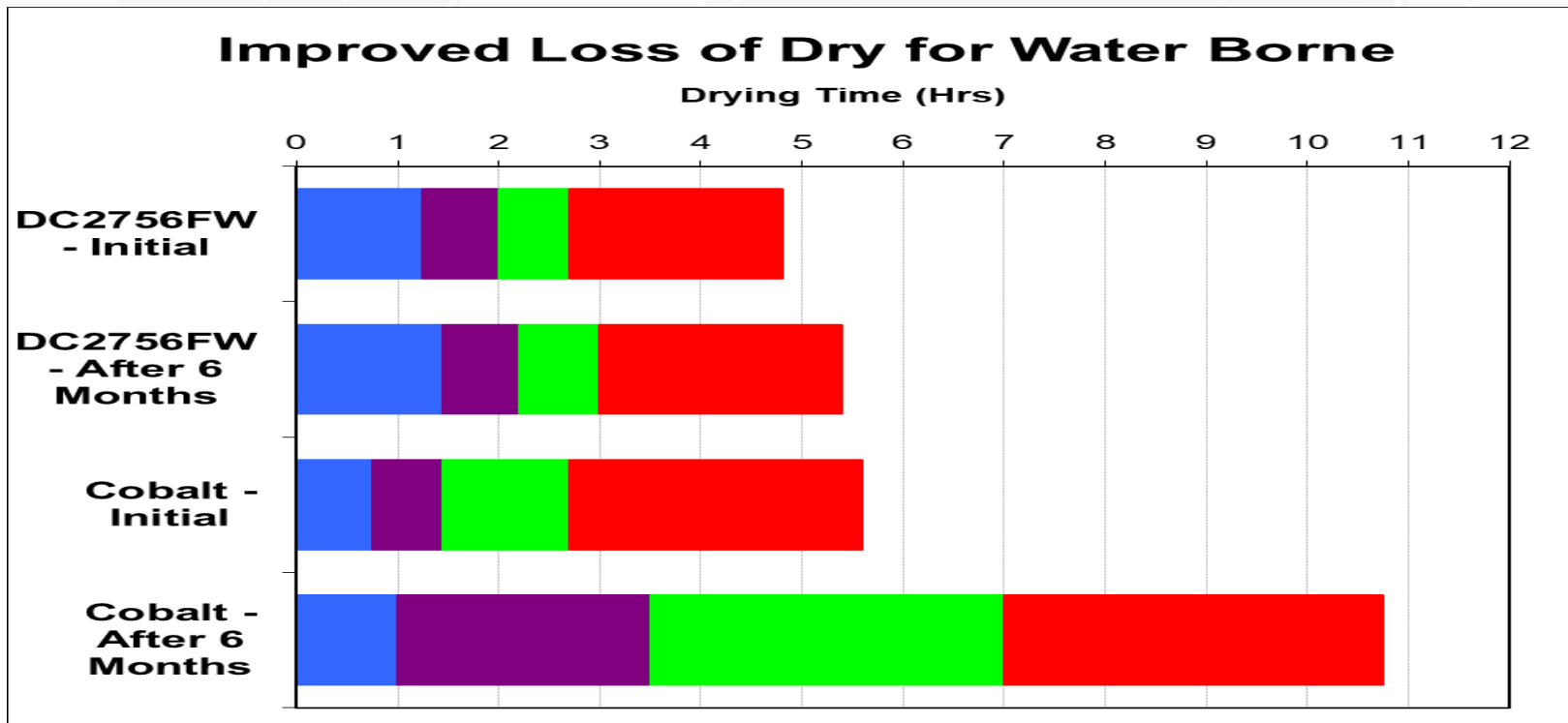


Improved Loss of Dry – Red Pigment



No Loss of Dry in Water - DriCAT[®] 2756FW

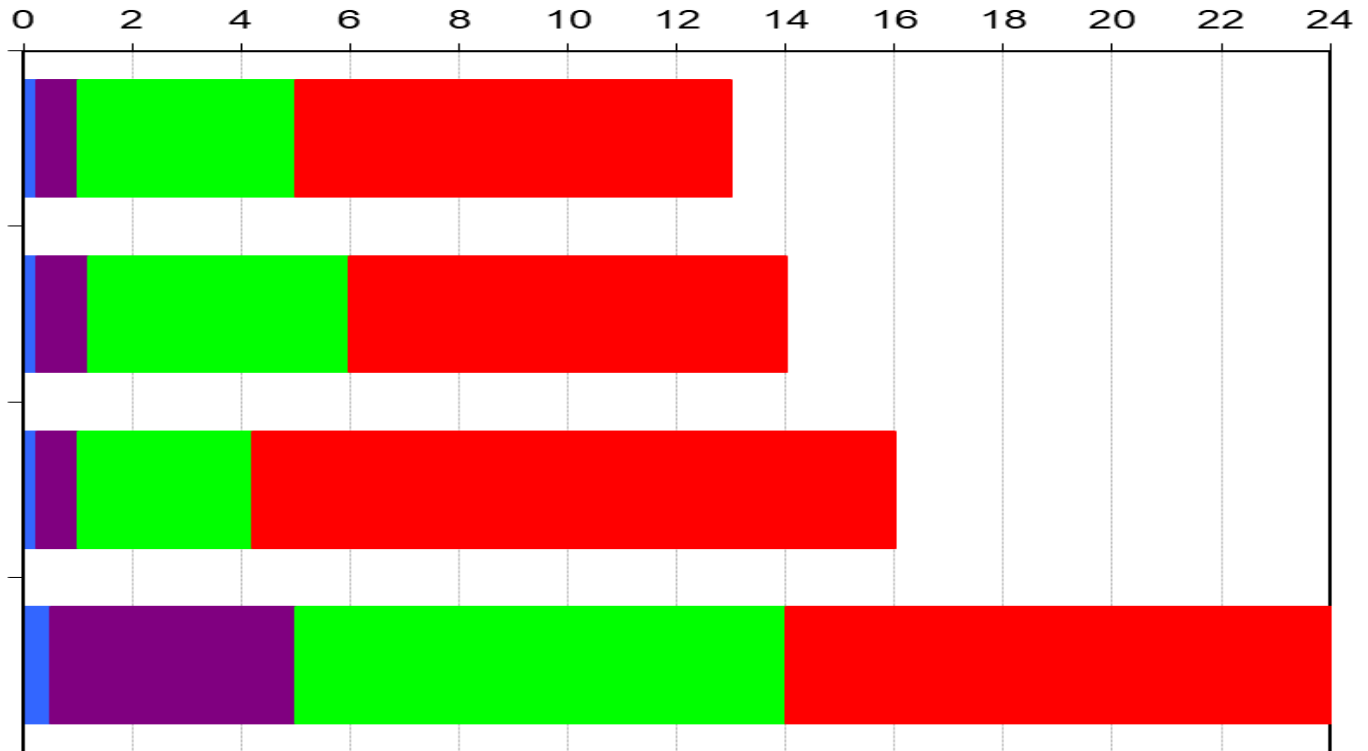
- Products are not hydrolysed by water, giving longer in can stability



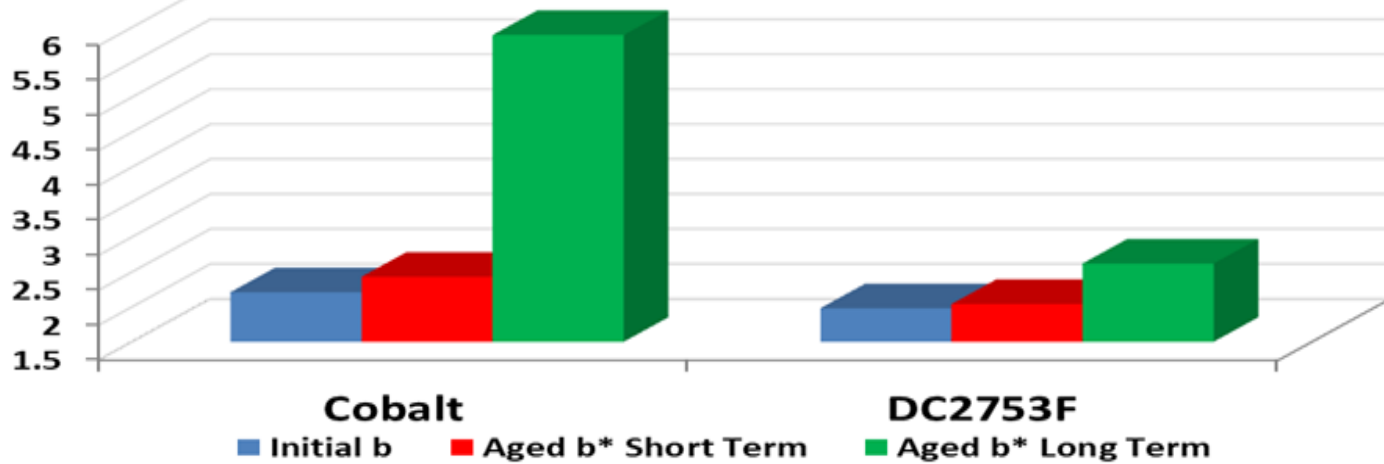
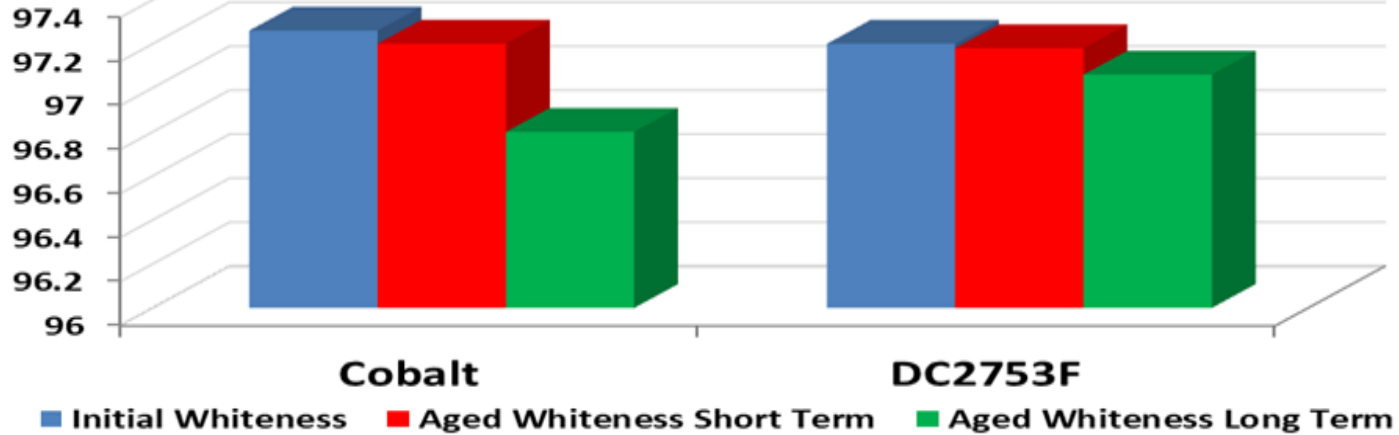
No Loss of Dry in Water - DriCAT[®] 2735AQ*

Improved Loss of Dry for Water Borne

Drying Time (Hrs)



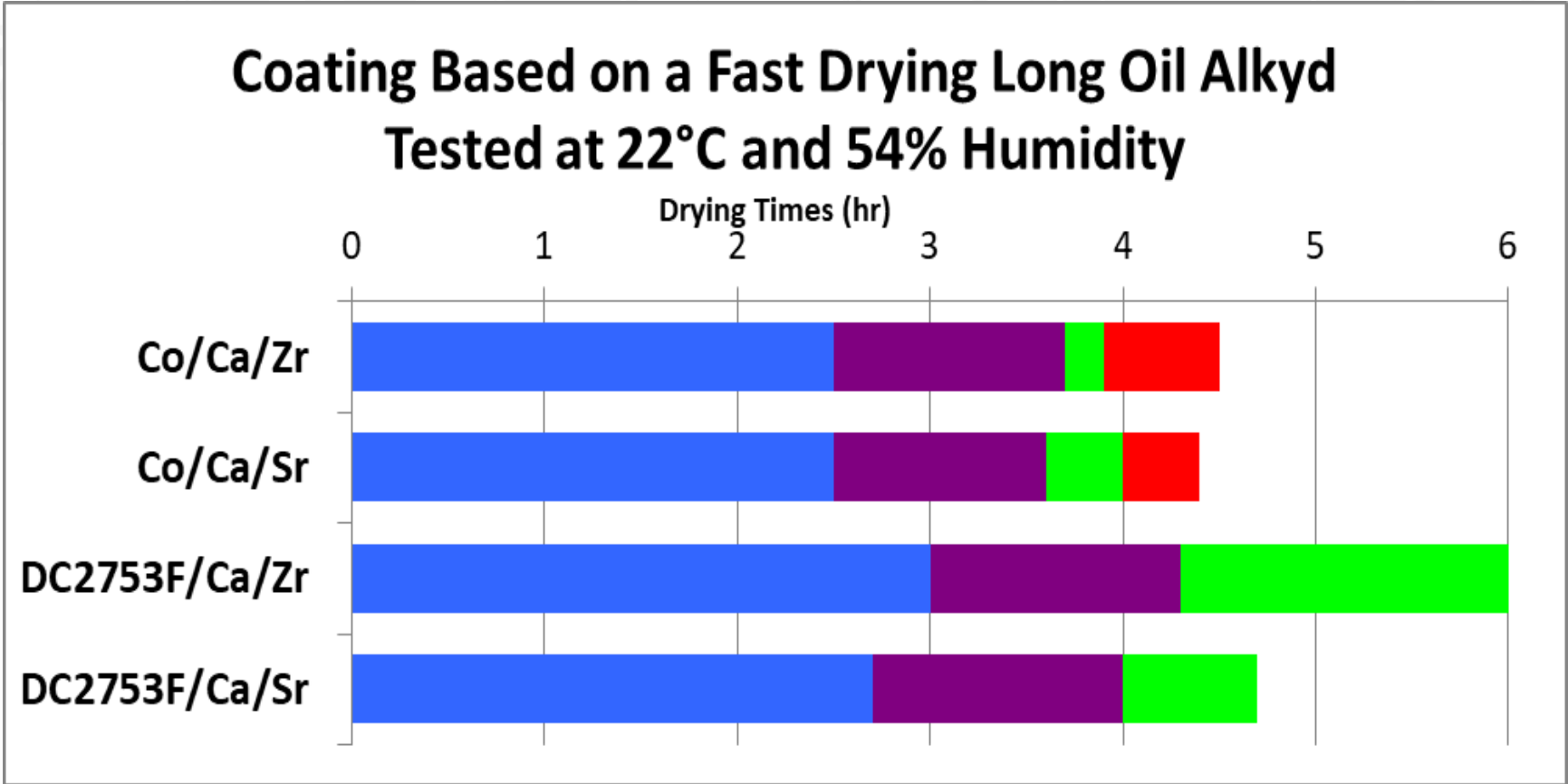
Long Term Colour Retention



Overbased Strontium Drying Test Evaluations

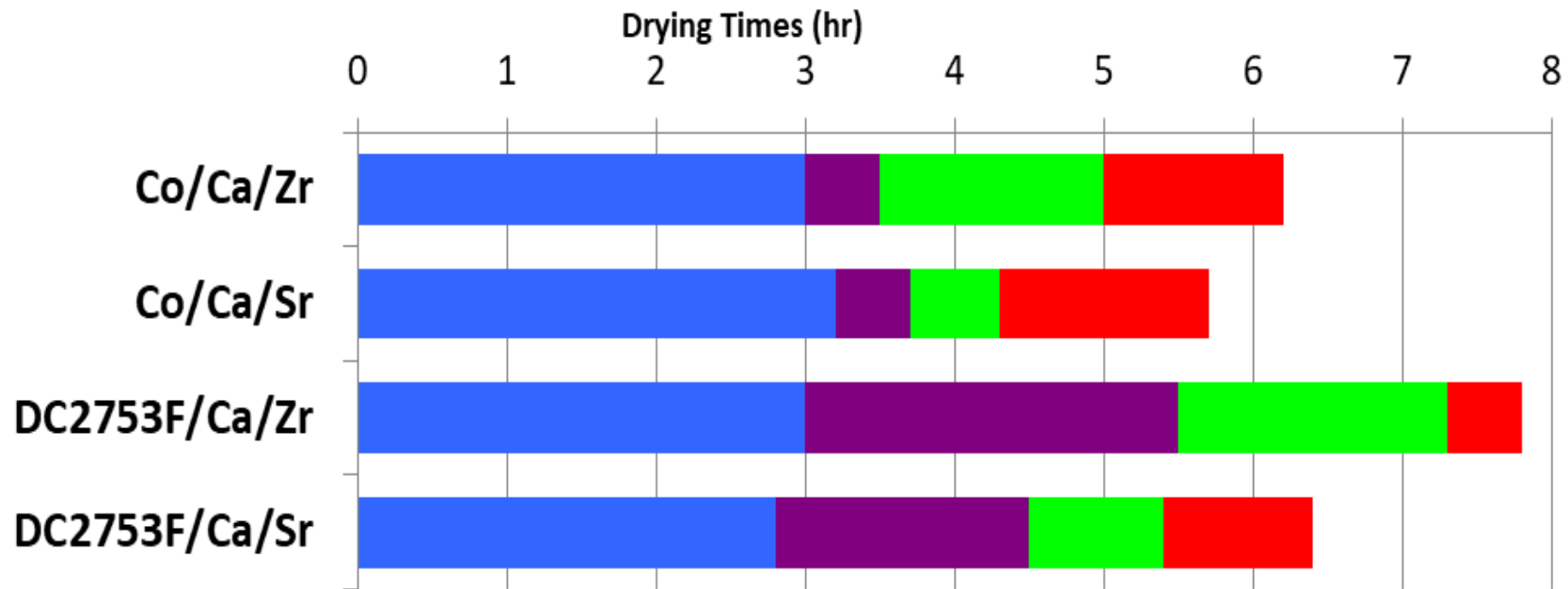
- **Duroct[®] Strontium 18%** w/w replacement for Zirconium 18%.
- Tested in Cobalt and DriCAT[®] 2753F based systems.
- No other changes to the paint formulations.
- 22°C and 50% humidity.
- Long oil alkyd based systems.
- Loss of Dry assessed.

Coating Based on a Fast Drying Long Oil Alkyd



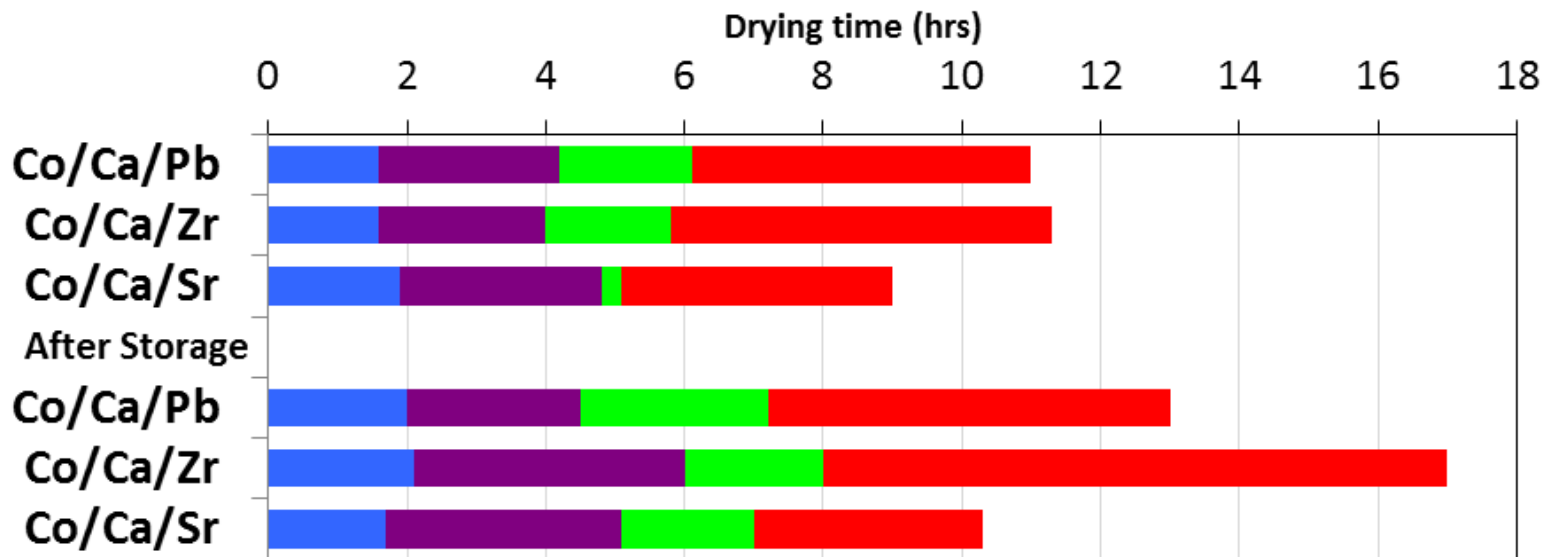
Coating Based on a Linoleic Rich Long Oil Alkyd

Coating Based on a Linoleic Rich Long Oil Alkyd Tested at 24°C and 60% Humidity



Blue Pigmented Coating – Loss of Dry

Loss of Dry Observed in a Blue Pigmented Coating after 4 Weeks Storage at 40°C



Summary

- Dura Europe S.A.U. offers effective alternatives to standard cobalt driers.
- Customers coatings can be cobalt free or cobalt compliant.
- **Duroct[®] Strontium 18%** is the best through drier in all alkyd coatings.

Thank you for your time
Thank you for listening

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Any Questions?
Come and Chat at Stand B1