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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.**

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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.**

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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

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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.**

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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.**

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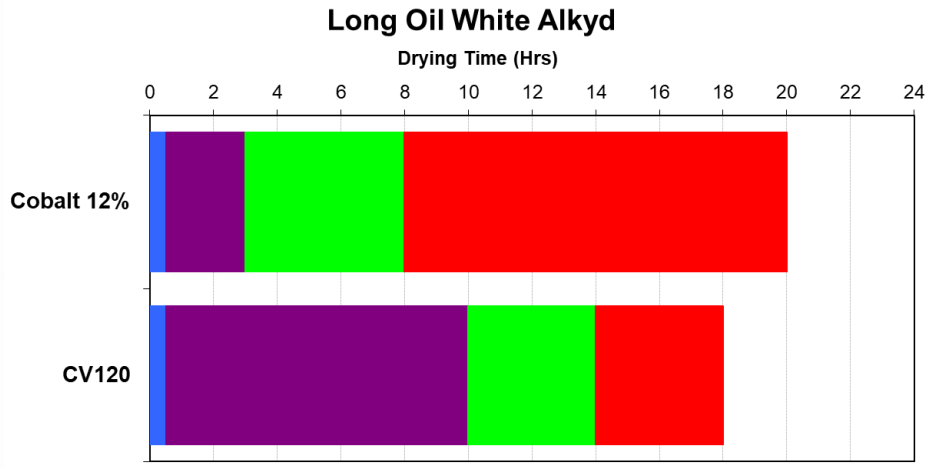
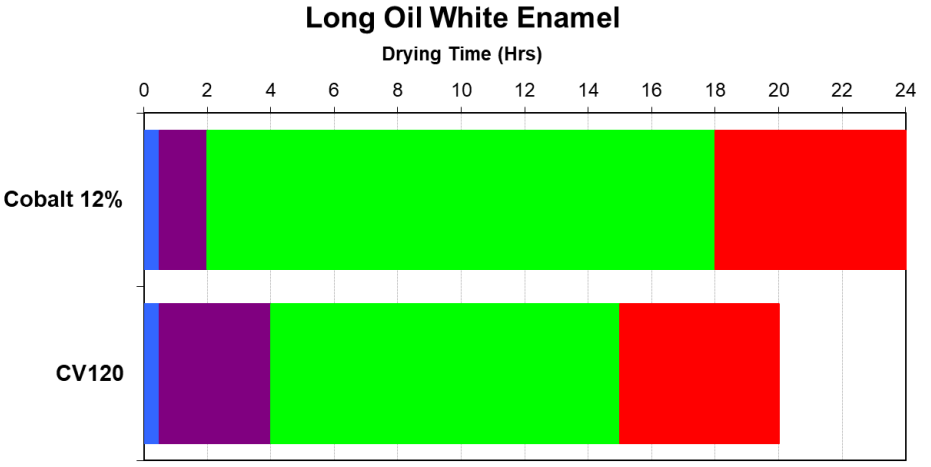
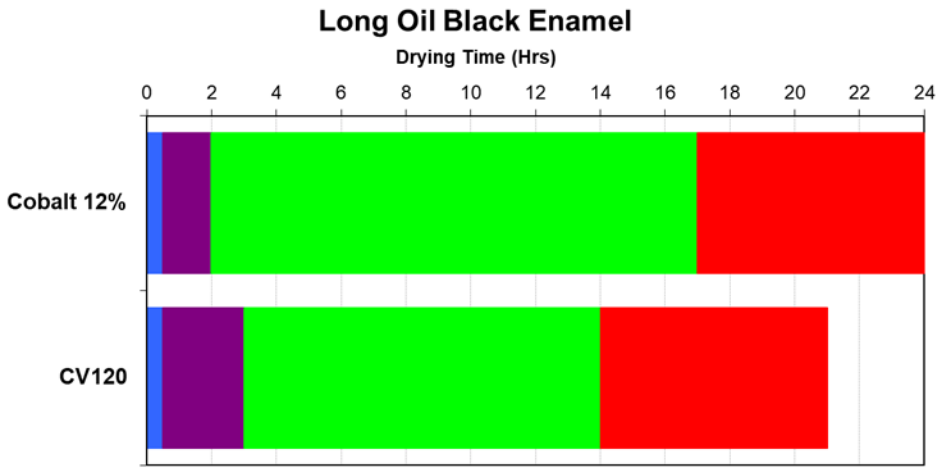
Long Oil Alkyds*







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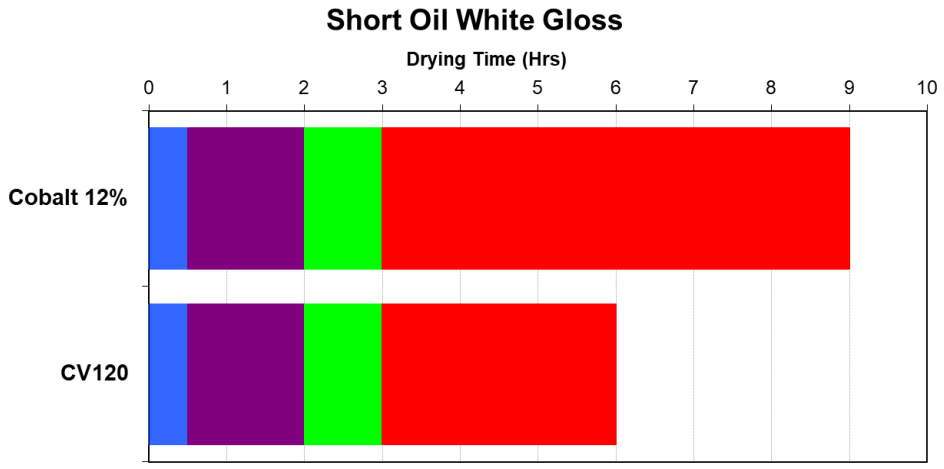
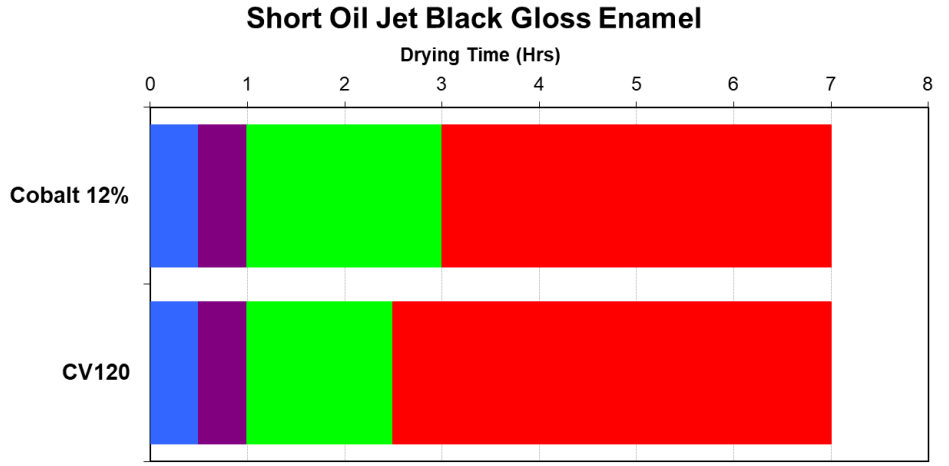
Short Oil Alkyds*





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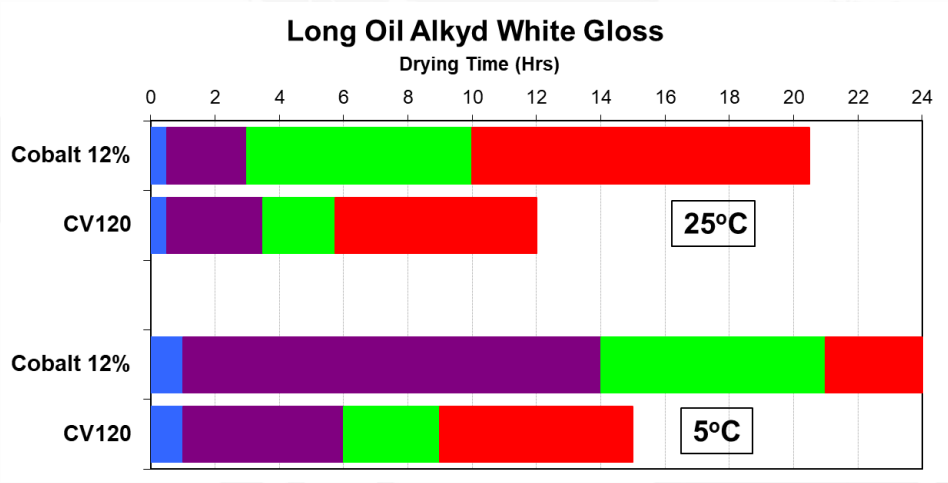
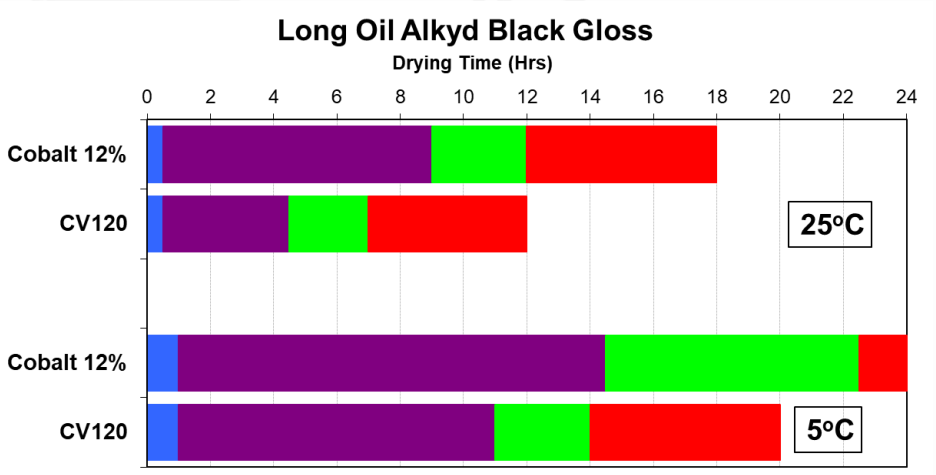
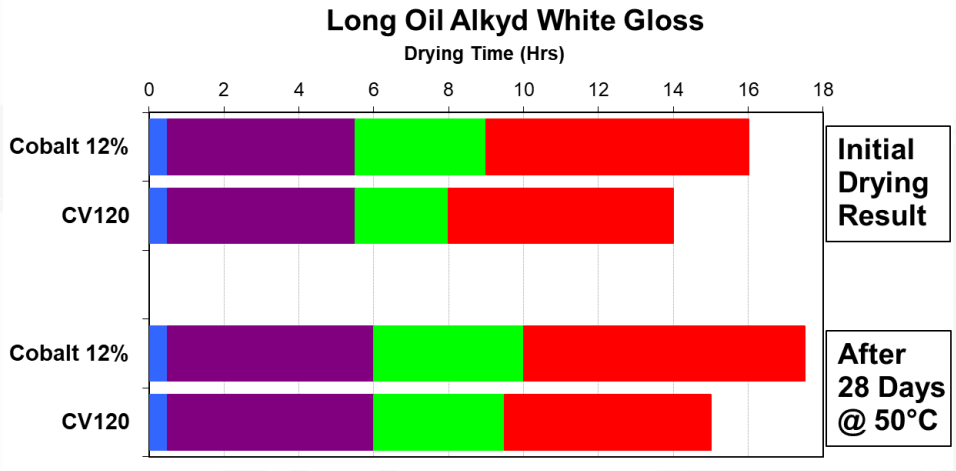
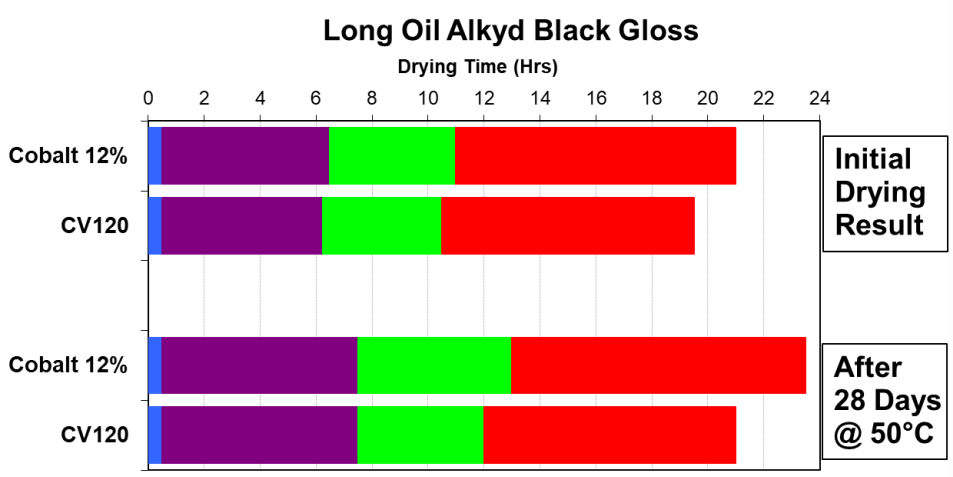
Low Temperature Testing*





Loss of Dry*


Long Oil Alkyd White Gloss
Drying Time (Hrs)
0
2
4
6
8
10
12
14
16
18
Cobalt 12%
CV120
Cobalt 12%
CV120
Initial Drying Result
After 28 Days @ 50°C


Long Oil Alkyd Black Gloss
Drying Time (Hrs)
0
2
4
6
8
10
12
14
16
18
20
22
24
Cobalt 12%
CV120
Cobalt 12%
CV120
Initial Drying Result
After 28 Days @ 50°C

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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.**

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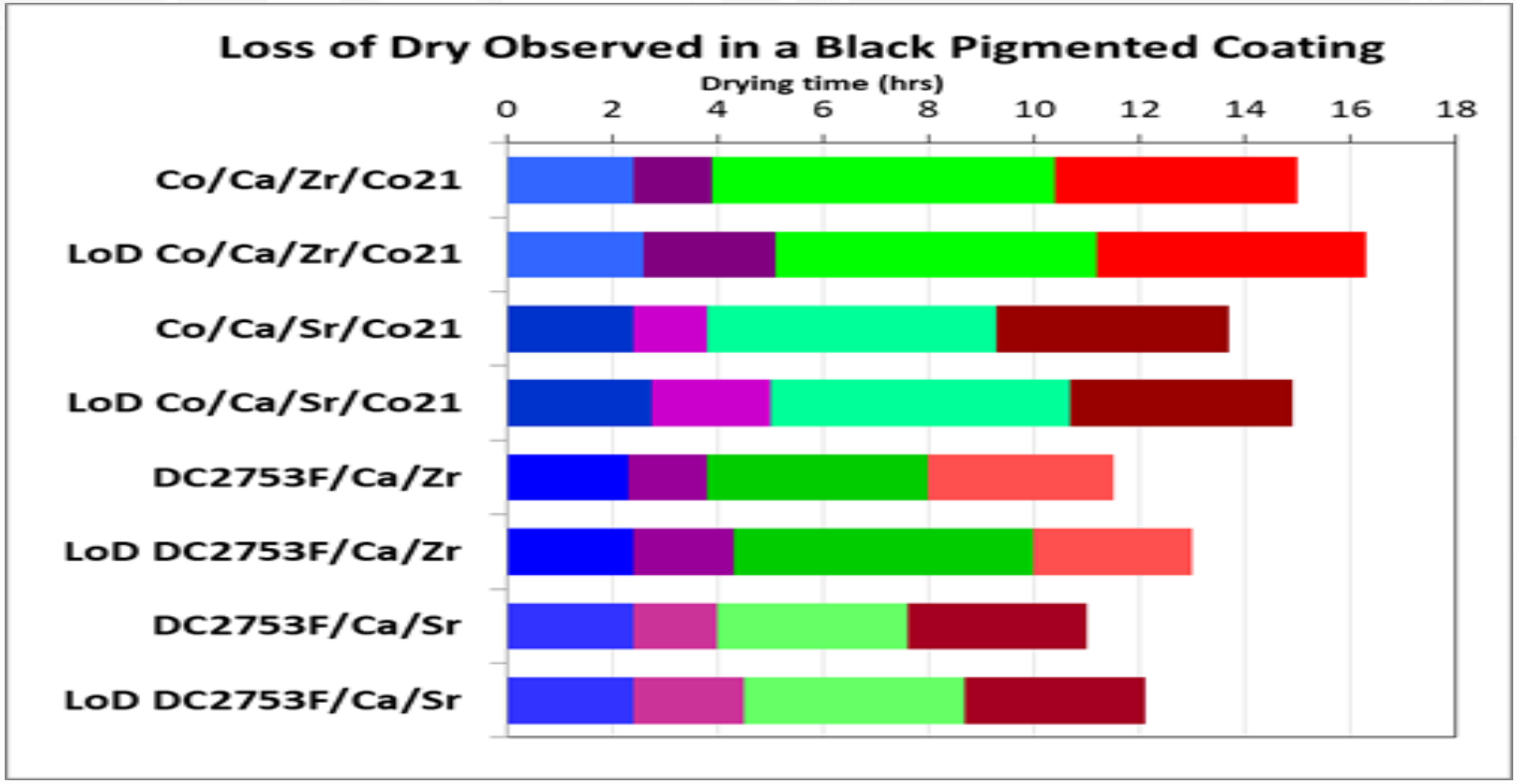
Improved Loss of Dry – Black Pigment

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



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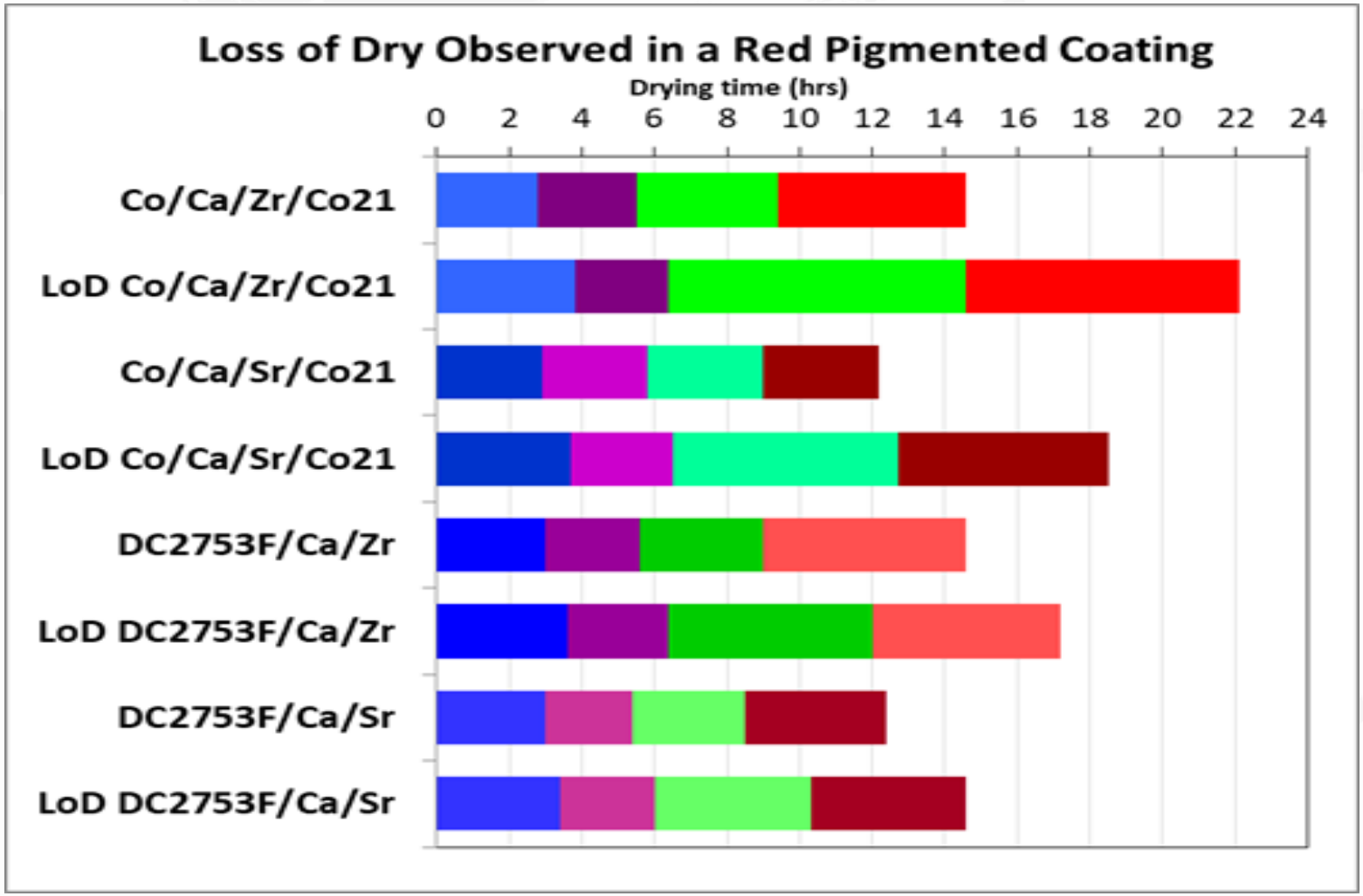
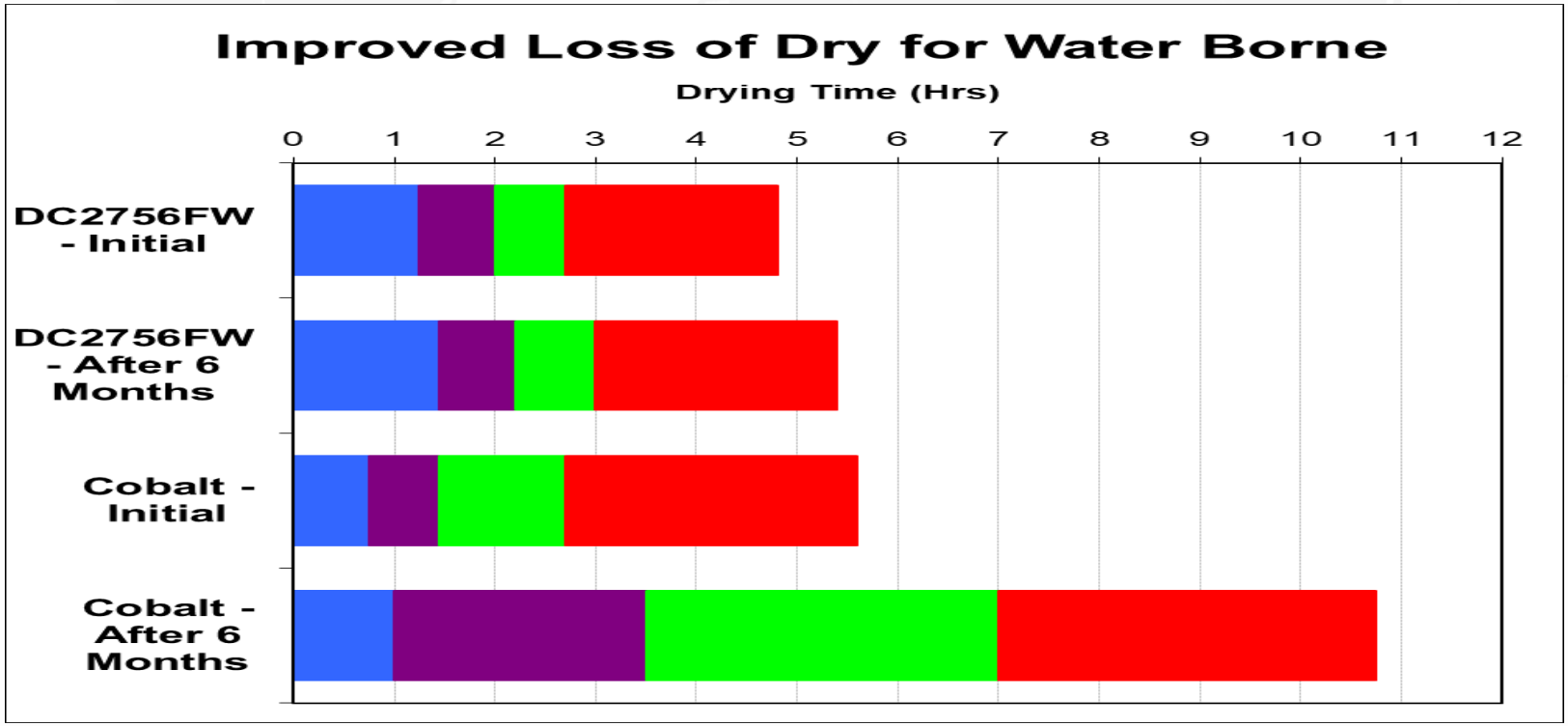
Improved Loss of Dry – Red Pigment



No Loss of Dry in Water - DriCAT® 2756FW

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



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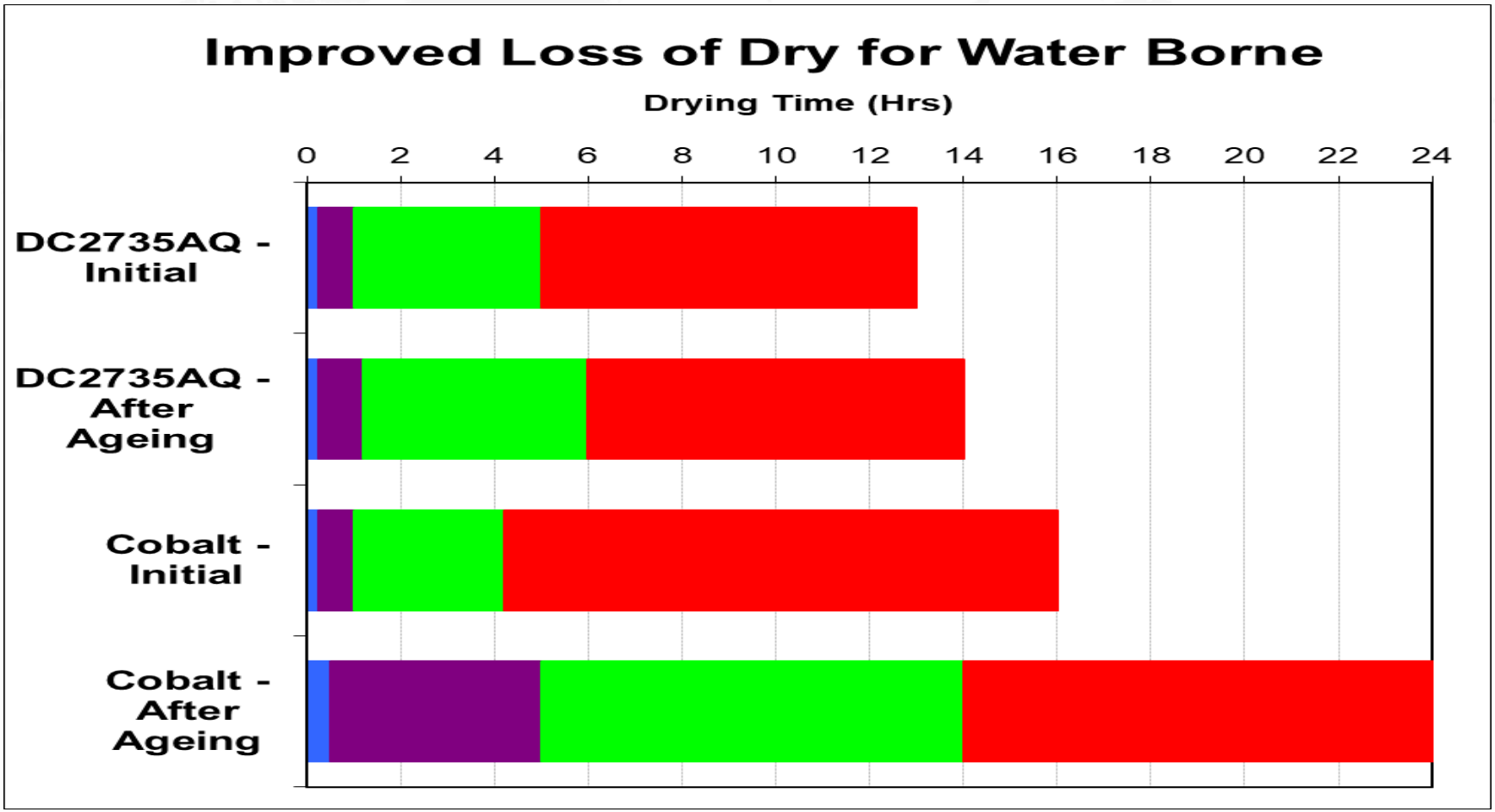
No Loss of Dry in Water - DriCAT® 2735AQ*



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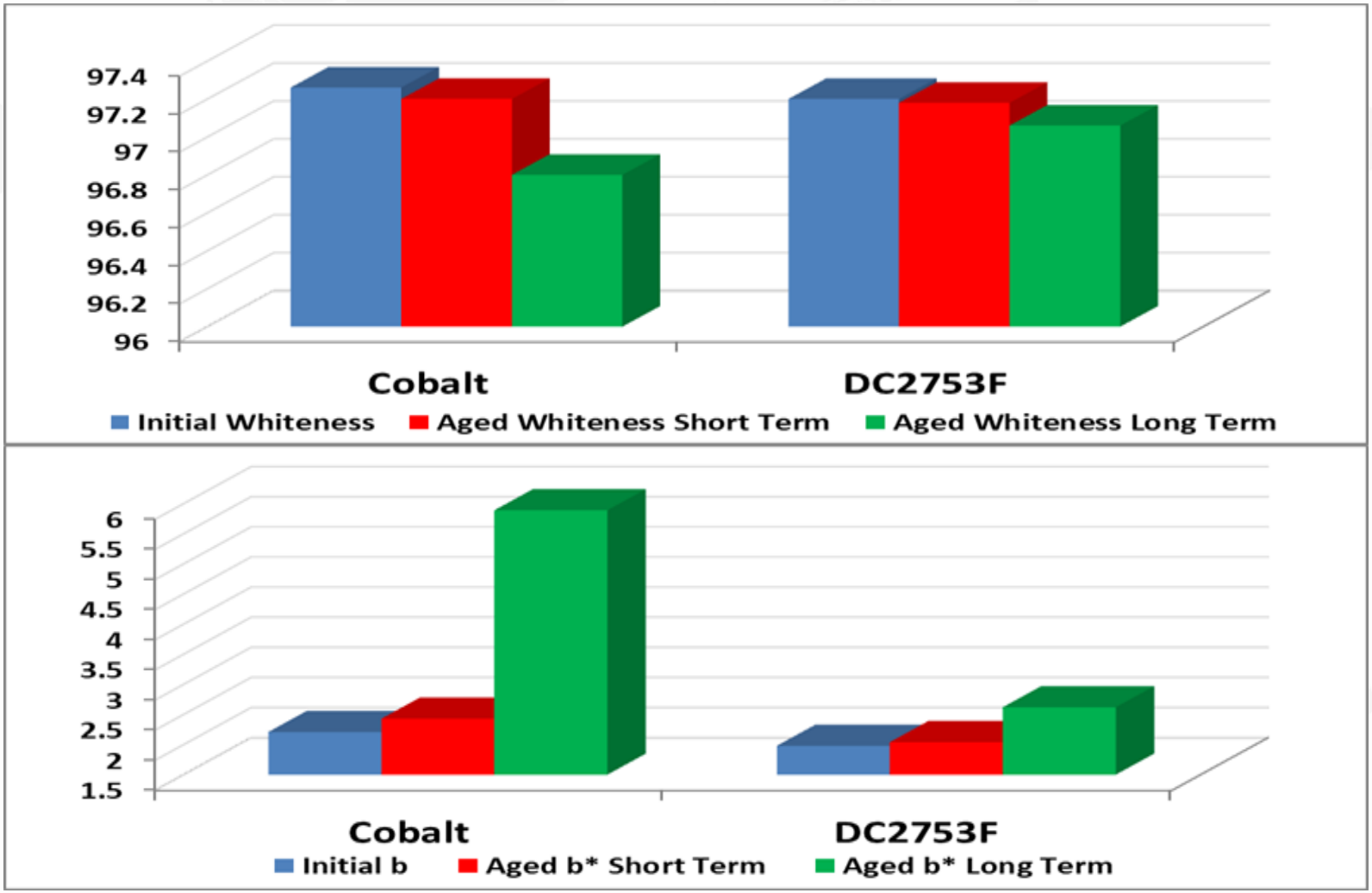
Long Term Colour Retention



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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.**

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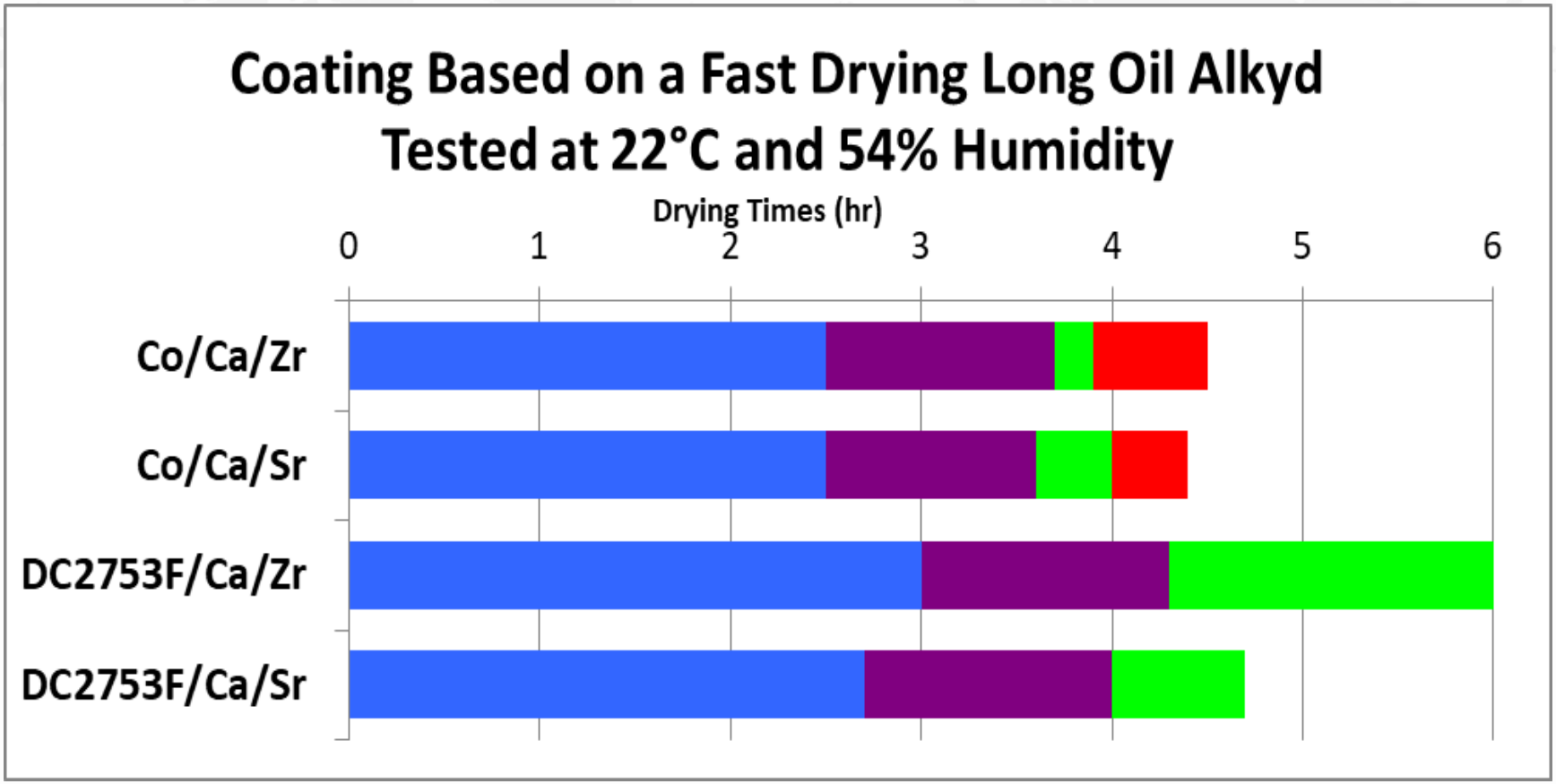
Coating Based on a Fast Drying Long Oil Alkyd



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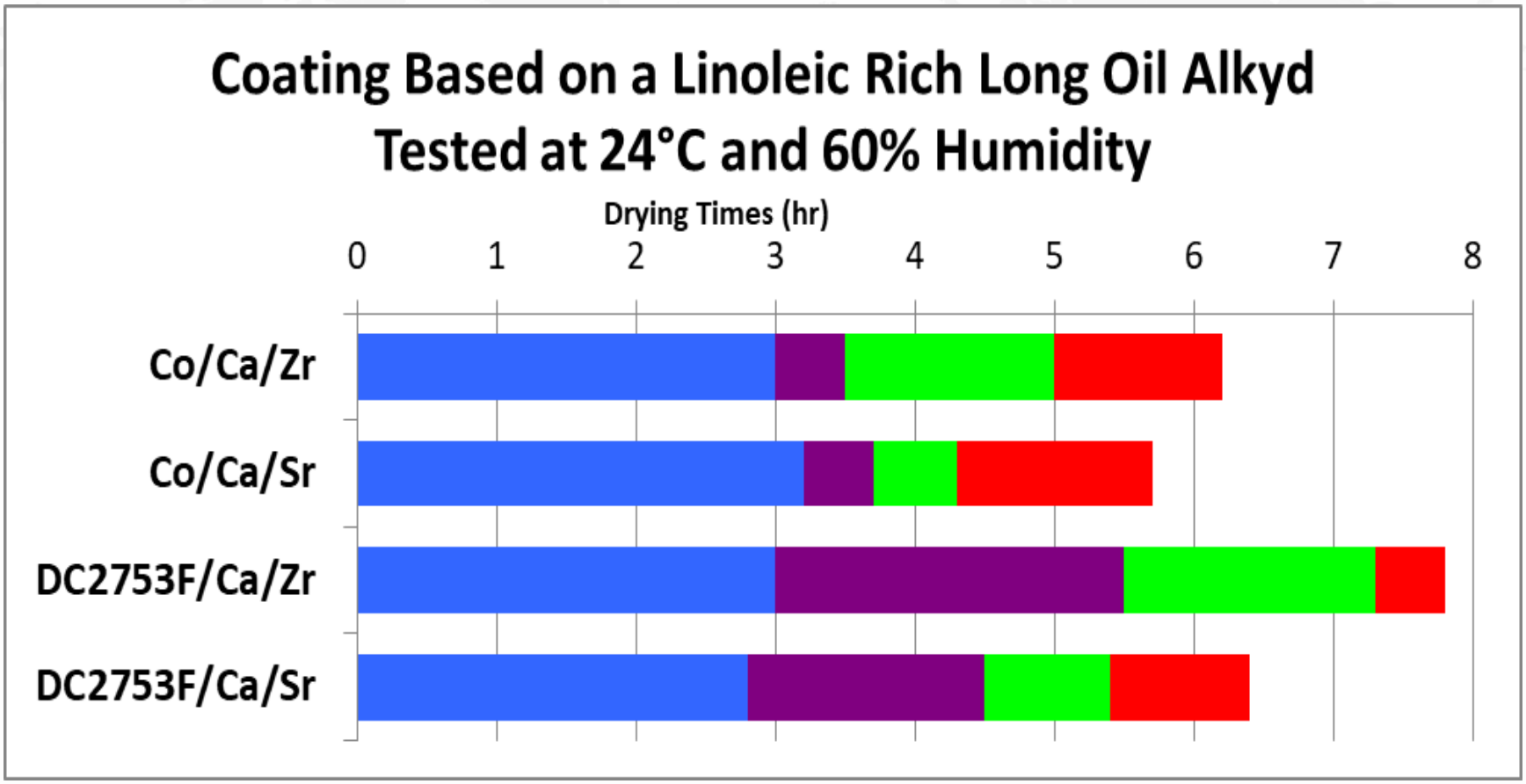
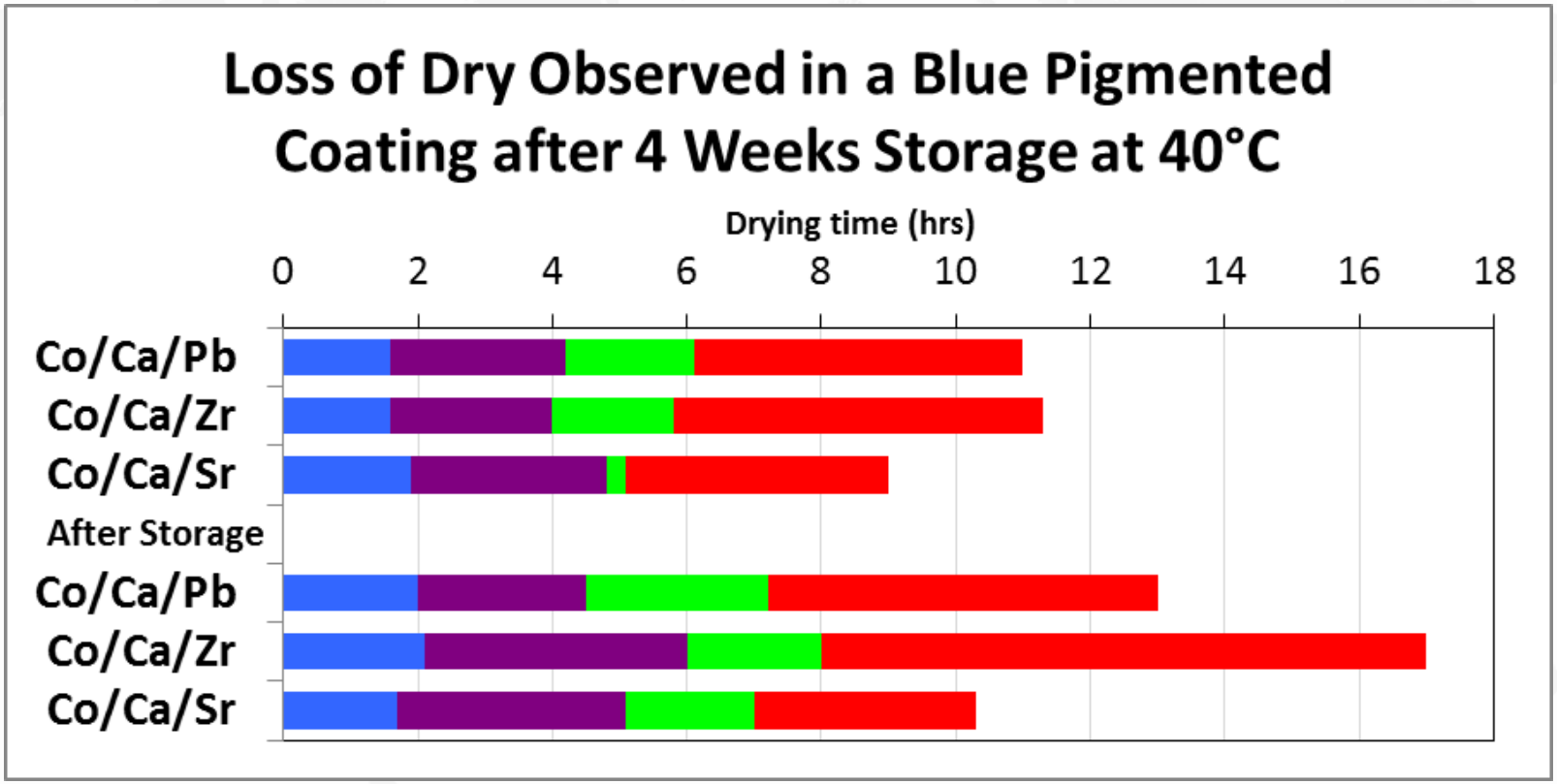
Coating Based on a Linoleic Rich Long Oil Alkyd



Blue Pigmented Coating – Loss of Dry



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