

THE ADVANTAGES OF WATER-BASED PRIMERS AND TOP COATS OVER SOLVENT- BASED PRODUCTS. DANGEROUS GOODS: LEAD IN PAINT

There is an increasing trend worldwide towards *industrial* waterborne coatings. This trend has come about for a number of reasons:

1. **Environmental.** There are significant concerns internationally and in South Africa regarding the damage that the manufacture and use of solvents is causing to the ozone layer.
2. **Health and Safety.** Worldwide the legislation regarding Health and Safety is becoming stricter and more closely monitored. South Africa already has strict Health and Safety legislation and although it is poorly monitored, this practice is changing. In the event of work-related illness years into the future, employers can and will be held liable. Unions and workers are also becoming increasingly educated regarding the work-related dangers which chemicals and solvents pose. Legislation banning the use of Methanol in thinners, which is mainly used in Lacquer Thinners (LQ), is already in force. **The Hazardous Substances Act: Lead in Paint**, was enacted into Legislation with effect from **17 May 2024**. The Legislation bans the use of Lead Chromate pigments (mainly Chrome Yellow, Lemon (Primrose) Yellow and Moly Orange (Scarlet)) in paint. Effective 17 May 2025 it will be a criminal offence, punishable by large fines and/or imprisonment to manufacture /buy /sell/ use, import or export any coating containing more than 90 ppm lead. (This Legislation further dictates that the term “lead free” may not be used). See the link below for more details on this Legislation and the implications there of. For more information see <http://durapaints.co.za/wp-content/uploads/2024/11/Dura-Paints-Hazardous-Substances-Act-Lead-in-Paint-letter.pdf>
3. **Fire and Storage.** Current legislation makes the correct handling and storage of solvents very expensive. Solvent stores (flammable liquid stores) are mandatory. These stores are difficult to construct and maintain. Obtaining the necessary approval from the relevant fire authorities can also be arduous. This legislation is similarly poorly implemented, until such time as there is a fire and somebody is injured or there is an insurance claim. Insurers will not entertain claims where solvents (even small amounts) have not been correctly declared, stored and without the relevant current documentation in place. The required documentation is to be updated in an annual basis. It takes very little solvent to start a fire and cause millions of rand worth of damage.
4. **Performance.** In the past there have been a number of significant problems which have prevented the coatings industry from moving towards waterborne coatings. These were:
 - Poor gloss levels
 - Extended drying times.
 - Inferior corrosion and chemical resistance
 - Cost.

These historical waterborne coating performance issues have been overcome. One of the most difficult and taxing applications for a coating is the painting of vehicles (exposure to UV sunlight, dust, rain, sea air, extreme temperatures, acid rain, the fast drying times required for production,

ultra-high gloss levels etc). Automotive manufacturers around the world are now painting all their vehicles with waterborne coatings.

On the issue of cost, waterborne coatings may at first glance appear to be more expensive on a rand per litre basis but the afore mentioned issues need to be taken into account when analysing the finished cost per m² of painted substrate. Furthermore all the solvent used in a coating evaporates off when it is being applied (otherwise it would not dry). All the solvent used to thin down the paint also evaporates off. Thinners (solvent) purchased separately is also wasted in large quantities by washing spray guns, vehicle parts and evaporation either from tanks or from the container lid being left off. Although the Rand per litre may be higher for waterborne coatings, the actual finished cost per m² is lower than traditional coatings.

The disposal of waste/dirty solvent is becoming more problematic and very expensive when managed according to Legislation. The habit of throwing dirty solvent down drains is also illegal and extremely dangerous. This practice is far more common than management realise, as is the practice of painters and other employees washing their hands and clothing in solvent.

The price of solvent is base on the dollar/oil price and has increased over 200% in the past few years. This trend is going to continue into the future. Waterborne coatings on the other hand are becoming more cost effective as the demand for waterborne coatings increase –giving manufactures economy of scale.

Direct to Metal (DTM) high performance, waterborne PRIMERS and TOP COATS are already available. They can be applied to prepared steel, galvanised steel and aluminium. The PRIMERS's offer excellent adhesion and corrosion protection. The TOPCOATS exhibit good gloss, chemical and protective properties.

The advantages of waterborne coatings.

1. Smaller ecological and environmental footprint. Companies are increasingly being evaluated on the effect they are having on the environment - the so-called triple bottom line.
2. No solvent usage in product manufacturing, application, cleaning and thinning, resulting in significant cost savings. Generally, management have very little idea of exactly how much money is being spend on "thinners".
3. The substantial cost and management of correctly storing solvents and solvent based coatings in a flammable liquid solvent store is eliminated.
4. No fire hazard attributable to solvents.
5. Reduction in insurance premiums.
6. No need to dispose of contaminated solvent.
7. Improved Health & Safety.
8. There are minimal handling or transport requirements for waterborne coatings compared to solvent-based coatings.
9. Spray painting equipment can be washed with water.
10. Employees can wash up with ordinary soap and water.
11. No waterborne coatings supplied by Dura Paints contain Lead Chrome pigments (see above).

Who should be consider changing to waterborne coatings?

1. Companies which operate in hazardous environments e.g. mines, chemical plants, refineries etc.
2. Companies which have employees exposed to solvent-based coatings and which carry out industrial painting, especially those who do not have compliant spray booths.

3. Companies which want to reduce their fire hazard exposure, their business risk and insurance premium costs.
4. Companies which have Environmental Protection Policies in place and wish to improve on their current situation.
5. Companies that wish to avoid capital expenditure on expensive and difficult to maintain flammable liquid stores.

Water-based products available through Dura Paints.

Dura Paints offers a range of quality, water-based, industrial coatings which conform to the legislative lead minimum requirement of < 90 ppm.

- Hydro Prime
- Hydro Finish
- Hydro Paint over Rust
- Hydro 2 in1
- Eggshell Aqua

Please contact your Technical Sales Representative for further information regarding the options available to you to transition from solvent-based coatings containing Lead Chromates, to water-based coatings which comply with legislative lead minimum requirement of less than 90ppm.