

Paint Problems and Solutions Guide

ENDURA
PAINT

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Paint problems are easy to spot, but in many cases quite difficult to analyze. Endura paint created this guide to assist applicators. The guide contains information and advice from experienced applicators, technicians, and product developers. Additional information is always available through your regional sales representative.

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Surface Cleaning

- thoroughly clean and rinse
- use high quality water-based products
- tack cloth wipe dry
- clean just before coating application

Surface Preparation

- commercial sandblast
- machine sanding grit - use recommended grit
- correct primer selection see product data sheets
- correct primer application

Preparation of Product

- follow the recommendations of Endura Product Data Sheets and product labels
- correct mixing ratio
- use only Endura recommended: activators, additives, and thinners
- recommended spraying viscosity

Application

- spray technique
- compatible temperatures:
 - product
 - substrate
 - spray booth
- recommended film build thickness
- curing rate/drying time

Equipment

- compressor
- air lines
- spray gun set up

Environment

- spray booth:
 - temperature
 - clean air intake source
 - air replacement rate
 - general cleanliness
- weather and humidity



Description: Hollow bubbles in the paint film.

Identification

- Bubbles in or under the finish (0.5 to 1.5 mm)
- May follow the shape of a repair spot
- Most common on horizontal surfaces
- May contain a vapor or a liquid

Probable Cause

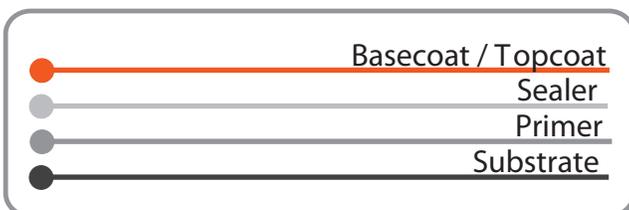
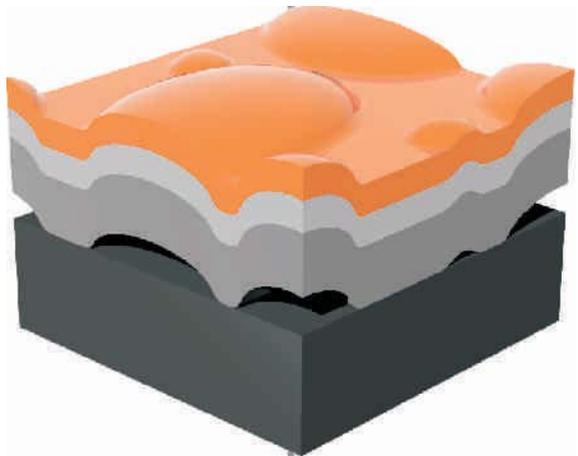
- Excessive moisture in air supply while priming/topcoating
- Primer not allowed to dry thoroughly
- Improperly cured 2-part polyester body filler
- Topcoat immersed in water for extended periods of time

Remedy

- Remove finish
- Check for moisture damage
- Use recommended epoxy fillers
- Apply primer/sealer
- Repaint

Prevention

- Allow sufficient drying times
- Use EP-2C Hi-Build Epoxy Primer (waterproof at 12.0 mil) in high moisture conditions
- Cover painted articles for long term storage with a non-airtight cover





Description: Small pieces of paint film breaking away.

Identification

- Small pieces of paint film missing
- Pinhole size to thumbnail size each
- May be exposing an underlying layer
- Usually seen on leading edges

Probable Cause

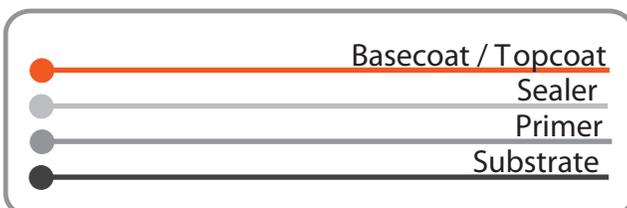
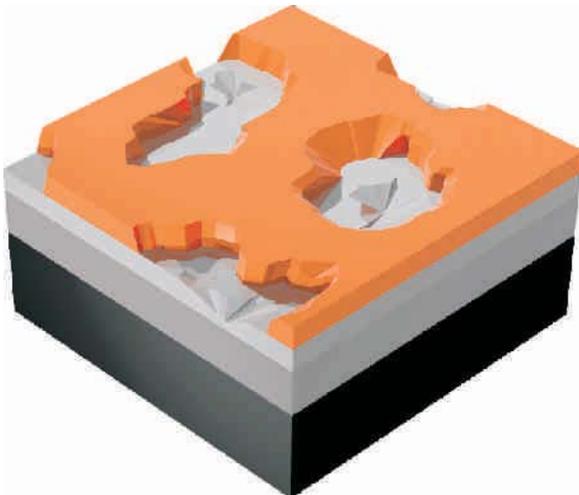
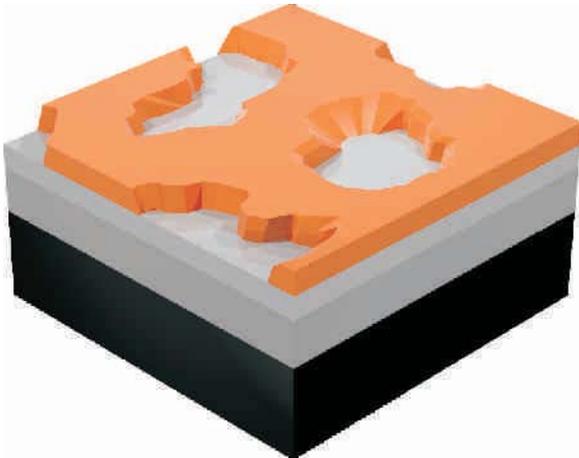
- Surface impact
- Using HS-421 Primer without sealing before applying topcoat
- Exposure to harsh conditions:
 - Frequent use on gravel roads

Remedy

- Small chips can be filled with 2-part polyester body filler
- Large chips or large areas with chipping should be blended - follow [Endura's Blending Procedure](#)
- Select the most suitable coatings for environmental conditions
- Repeat all steps in application procedure

Prevention

- Avoid use of HS-421 Primer in high impact areas
- Use EP-321 Epoxy Primer or EP-521 Epoxy Primer for industrial service (sandblasted steel, etc.)
- Use EX-2C TF-2K Topcoat for severe conditions





Description: Splitting throughout the paint film thickness.

Identification

- Topcoat splitting
- Series of straight lines
- Primer or substrate may be visible

Probable Cause

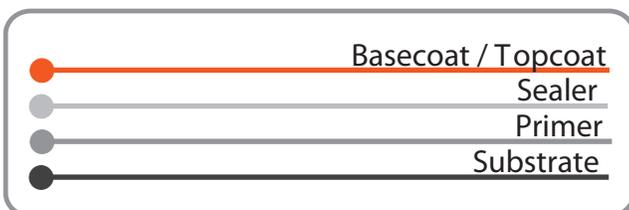
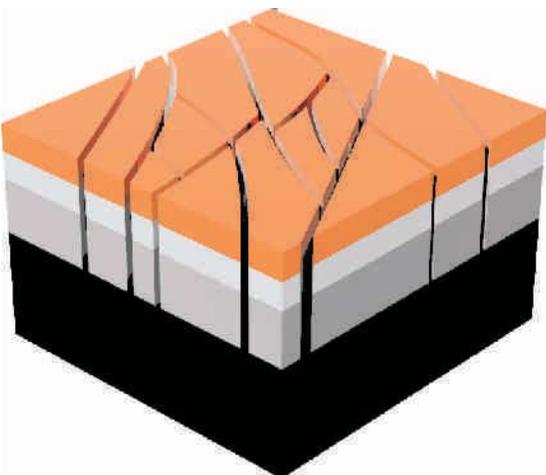
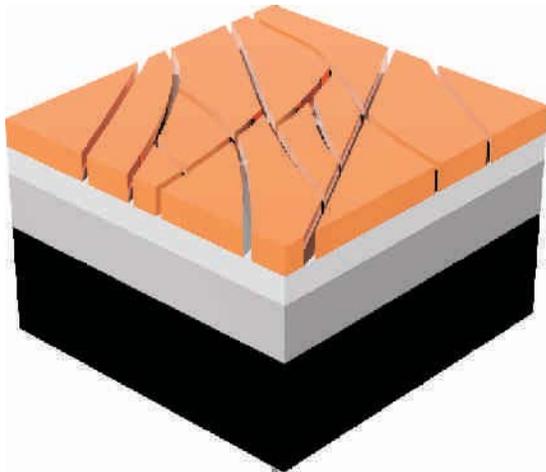
- Substrate not at room temperature
- Component "A" and Component "B" not uniformly mixed
- Coating applied over a previously cracked finish or unstable substrate
- Excessive total film thickness

Remedy

- Remove finish from affected area
- Apply primer/sealer
- Repaint

Prevention

- Remove poor quality/unstable finishes
- Check current film thickness before starting. Excessive paint should be removed before refinishing.
- Mix Component "A" and Component "B" thoroughly
- Follow recommended film thickness
- Follow recommended flash-off and drying time between coats





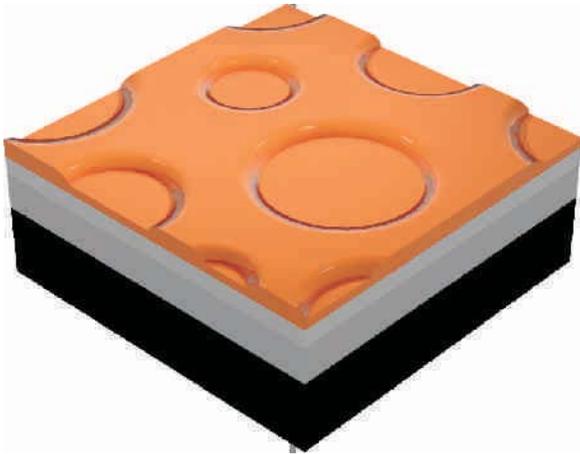
Description: Usually occurs while spraying or immediately after. Paint film marked with round surface depressions or bowl-like craters.

Identification

- Usually sporadic, confined to specific contaminated areas
- Previous coat is visible
- The centre may contain a particle

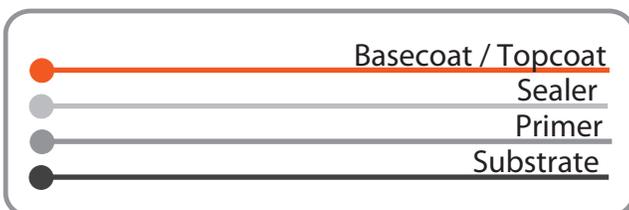
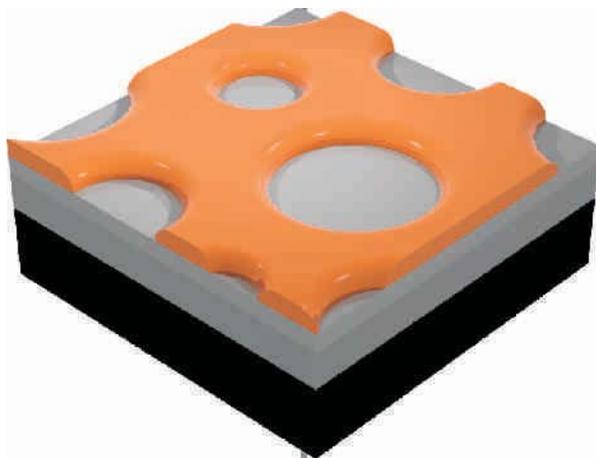
Probable Cause

- Surface contamination:
 - Silicone or wax based protective coatings or polishes
 - Hand prints
 - Grease, oil, diesel fuel
 - Wash solvents containing naphtha
- Contaminated booth air intake
- Insufficiently dried surface contaminated in shop/drying area
- Continual use of Endura Crater Eliminator



Remedy

- If noticed while painting:
 - Stop painting
 - Allow flash-off
 - Re-mix coating, adding more EX-2C Thinner:
 - 1 part Component "A"
 - 1 part Component "B"
 - 2 parts EX-2C Thinner
 - Continue to paint subsequent coats at the normal mix ratio
- Major problem:
 - Allow to dry thoroughly
 - Determine and remove the contaminant
 - Sand smooth
 - Clean substrate thoroughly with soap and water
 - Repaint



Prevention

- Proper surface preparation: use water-based cleaning solutions
- Ensure compressed air is not contaminated with oil and water
- Protect against diesel exhaust fumes and other air-borne contaminants
- Maintain a clean shop
- Use recommended amounts of Endura Crater Eliminator
- Reduce product for the first coat of topcoat
- Mist on the 1st coat of topcoat
- Allow booth exhaust fan to run as long as possible
- Provide a clean working area
- Wear clean protective equipment including latex or nitrile gloves



Description: Usually occurs with clearcoats. Wet paint film receding, leaving some areas uncoated.

Identification

- Lack of adhesion while spraying
- Coating varies from 'not hiding' to 'accumulated'
- Previous coat is visible
- Commonly occurs along edges or around rivets

Probable Cause

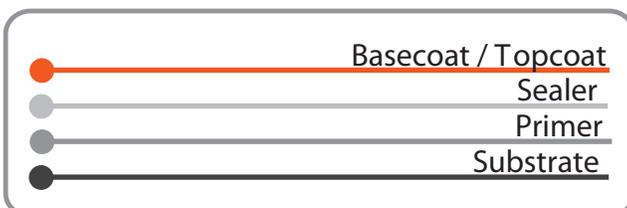
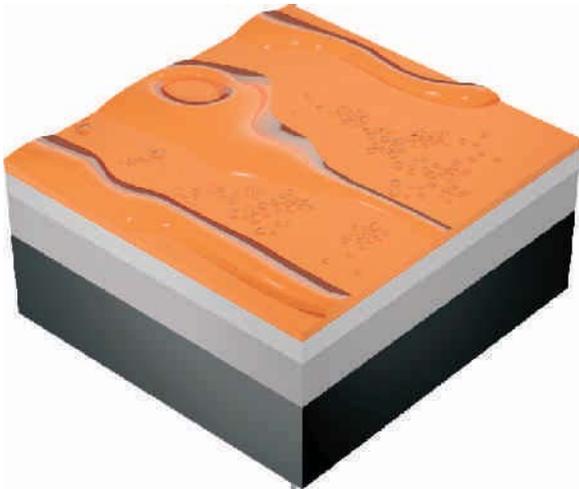
- A film of surface contamination
- Re-coating a painted or clearcoated surface already high in silicone content

Remedy

- Sand smooth
- Repaint

Prevention

- Proper surface preparation: use water-based cleaning solutions
- Frequently replace tack cloths and rags used to solvent wipe
- Pay special attention wiping edges and problem areas
- Reduce product for the first coat of topcoat
- Mist on the first coat of topcoat





Description: Usually occurs around edges, trim, or hardware. Paint film not adhering to the substrate, or, layers of paint film separating.

Identification

- Large pieces of coating peeling off
- Film peels off easily

Probable Cause

- Contaminated surface
- Metal conditioner and/or appropriate primer was not used
- Insufficient flash-off time between coats
- Poor quality sanding
- Incorrect film build-too heavy
- Incorrect Spray Technique:
 - Coating applied too dry or too heavy
- Insufficient flash off time between coats (and or between primer and topcoat)

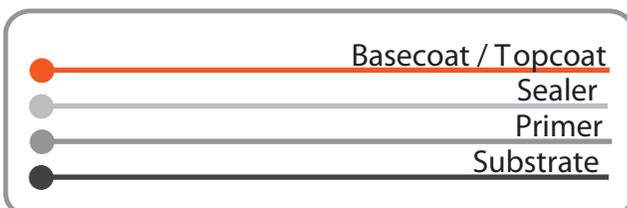


Remedy

- Featheredge the problem areas
- Use sealer as recommended
- Repaint
- Reduce total film thickness

Prevention

- Follow recommended topcoat window
- Follow recommended film builds, topcoat will delaminate if applied over an insufficient primer coat
- Follow recommended viscosity
- Follow recommended flash-off times
- Carefully sand edges and areas around hardware
- Use recommended metal conditioner and conversion coating
- Clean thoroughly with recommended water-based cleaners
- Mix Component "A" and Component "B" thoroughly





Description: Unique to metallic paints. Basecoat metallic flakes surfacing in the clearcoat

Identification

- altered colour
- exaggerated metallic appearance.

Probable Cause

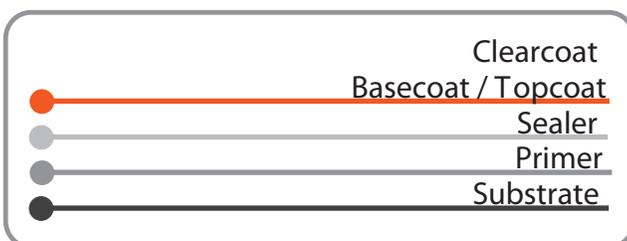
- Insufficient flash-off time between basecoat and clearcoat

Remedy

- Allow the paint to dry
- Sand smooth
- Repaint base and clear

Prevention

- Correct gun set up
 - use recommended air pressure
- Use recommended amounts of Endura Super Catalyst II in the basecoat
- Follow recommended flash-off times
- Follow recommended viscosity





Description: Areas of paint film lacking gloss.

Identification

- Dull surface with a grainy texture

Probable Cause

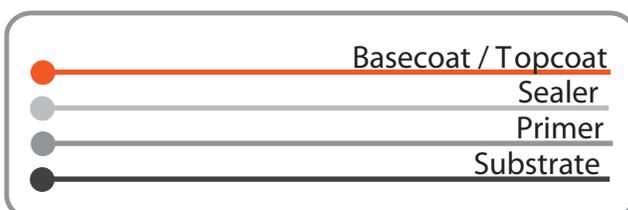
- Improper gun setting - insufficient fluid feed
- Gun air pressure regulated too high
- Viscosity too high
- Wrong thinner used - too fast
- Incorrect spray technique:
 - Holding spray gun too far from surface or passing too quickly resulting in an insufficiently wet film

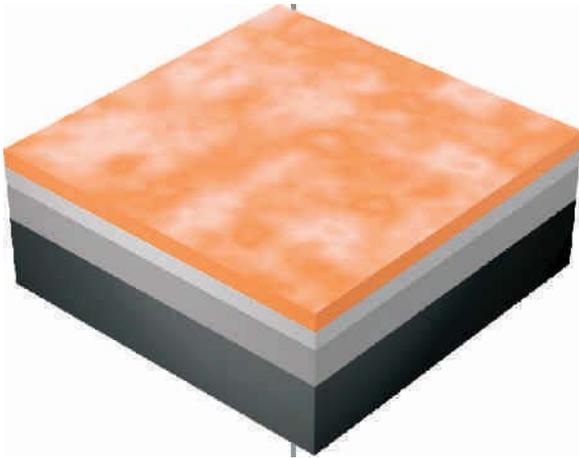
Remedy

- Allow the paint to dry
- Sand smooth
- Repaint

Prevention

- Only use Endura thinners/reducers, at recommended amounts (up to 50% by volume, based on equipment used)
- Use a slower thinner and retarder
- Adjust gun set-up, fluid feed
 - Follow recommended air Pressure
 - Use larger size fluid tip
- Alter spray technique, spray pattern





Description: Unique to metallic paints.
Concentrations of metallic flakes in the paint film.

Identification

- A cloudy or blotchy appearance.

Probable Cause

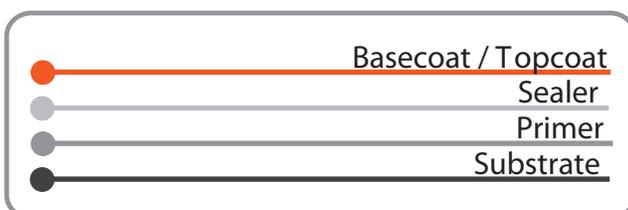
- Improper equipment: type of gun, size of nozzle
- Improper gun settings
- Incorrect spray technique:
 - Holding spray gun too close to surface
 - Uneven spray pattern
 - Application too heavy
- Wrong thinner/reducer for shop temperature
- Component "A" and Component "B" not thoroughly mixed

Remedy

- Sand smooth
- Repaint

Prevention

- Correct gun set-up:
 - Decrease nozzle tip size
 - Increase air pressure to provide more atomization
 - Decrease fluid pressure in pressure pot
- Proper selection of solvent for shop conditions
 - In cold conditions use fast solvent
 - In hot conditions use slow solvent
- Use a Hi-Hide Basecoat followed by Clear 221
- Use correct technique for applying metallic paints
- Apply final coat as a mist coat





Description: The primer or sealer not withstanding the solvent from the topcoat.

Identification

- Coating has lost gloss
- Sandscratches or other substrate flaws show through the paint film

Probable Cause

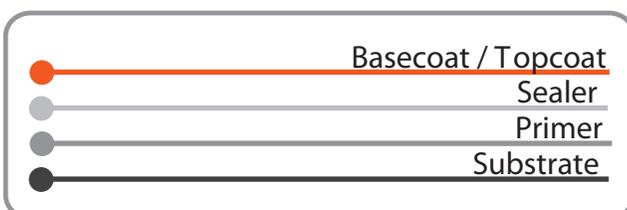
- Unstable substrate
- Wrong sandpaper grit - too coarse
- Primer oversanded
- Primer uncured
- No sealer was used on aged or spot primed finishes

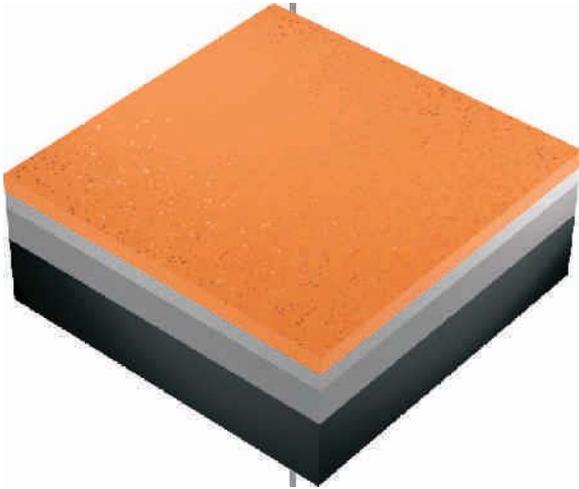
Remedy

- Sand smooth
- Use sealer if necessary
- Repaint

Prevention

- Use urethane, polyester, or epoxy fillers and Endura primers
- Use sealer if uncertain about substrate stability
- Follow Endura's recommendations for sanding
- Use Endura Super Catalyst II as recommended
- Allow sufficient flash-off times between primer and topcoats
- Allow a longer flash-off time between coats





Description: Dry paint film has a dimpled surface.

Identification

- Paint finish looks like the peel of an orange

Probable Cause

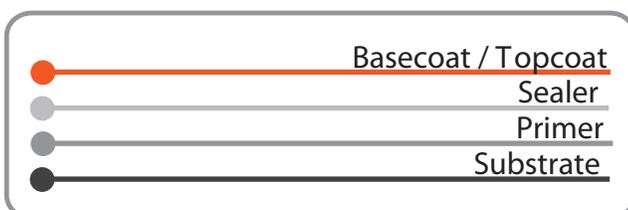
- Viscosity too high
- Gun air pressure too low (causing lack of atomization)
- Primer or sealer applied not smooth
- Wrong thinner/reducer
- Incorrect spray technique:
 - Holding gun too far from surface
 - Wide fan patterns
- Wrong amount of thinner or reducer used - not enough
- Poor quality sanding

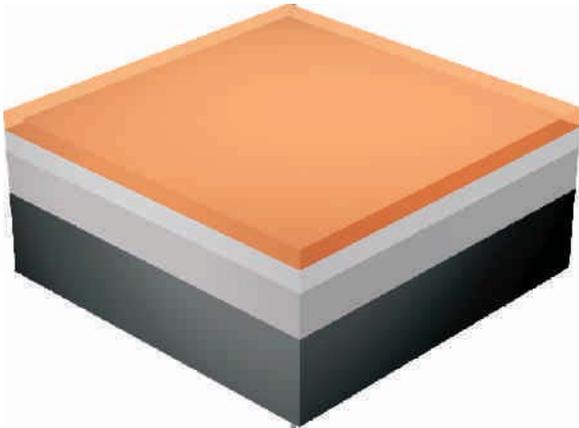
Remedy

- Sand smooth
- Repaint topcoat

Prevention

- Proper surface preparation: carefully sand smooth
- Check viscosity of products
- Adjust gun set up:
 - Use smaller size fluid tip
 - Use air cap that increases paint atomization
- Use recommended solvent





Description: Paint film not covering adequately.

Identification

- Insufficient total film thickness
- Finish has a transparent appearance
- Dull finish, not glossy

Probable Cause

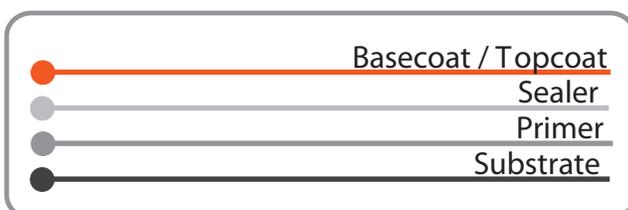
- Insufficient film build
- Not using basecoat when required for transparent colours
- Wrong amount of thinner/reducer - too much
- Insufficient lighting in the spray booth

Remedy

- Sand smooth
- Repaint

Prevention

- Use Endura's Hi-Hide formulation
- Use the recommended base colour
- Use a tinted primer when recommended
- Follow Endura's recommendations for reduction and number of coats
- Provide good lighting for spraying





Description: Usually occurs on vertical surfaces. A heavy paint film collects and moves downward, setting in ripples.

Identification

- A rippled, distorted paint film

Probable Cause

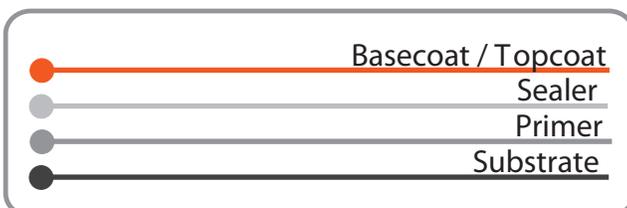
- Improper equipment set-up
- Gun air pressure too low (causing lack of atomization)
- Shop or substrate temperature too low
- Temperature of paint product too low
- Insufficient lighting in the spray booth
- Incorrect solvent for conditions
- Wrong amount of thinner/reducer used -too much
- Incorrect spray technique
 - Holding gun too close to surface
 - Application too heavy

Remedy

- Sand smooth
- Repaint

Prevention

- Maintain a suitable, consistent shop temperature and airflow
- Allow surface to warm up to at least room temperature before applying paint
- Store paint products at room temperature
- Provide good lighting for spraying
- Use proper gun settings and air pressure
 - Use smaller size fluid tip
 - Increase gun air pressure/increase atomization
 - Decrease pot pressure
- Use correct solvent for conditions
 - fast solvents for cold conditions
- Allow sufficient flash-off and drying time between coats





Description: Usually occurs when painting over repair work. Sanding scratches in the previous layer swell through the paint film.

Identification

- Swollen scratch lines that follow the direction of sanding
- Unusual light reflections

Probable Cause

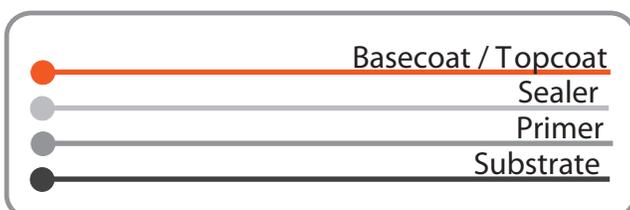
- Improper surface preparation
- Primer not allowed to dry thoroughly
- Insufficient flash-off time between coats
- Original finish incompatible with Endura products
- Excessive primer film build

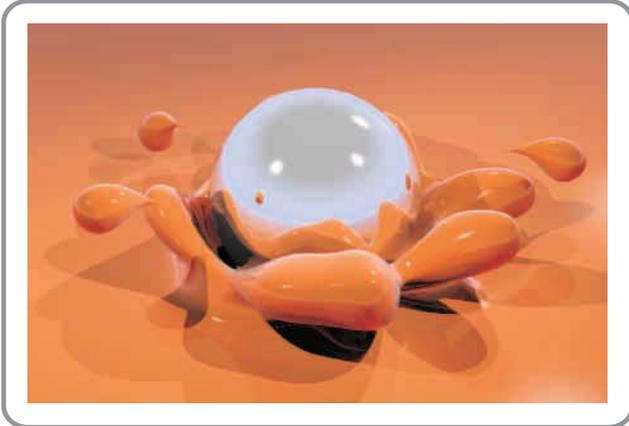
Remedy

- Sand smooth
- Apply sealer
- Repaint

Prevention

- Proper surface preparation: check recommended sandpaper grits
- Finish any polyester type filler with a finer grit sandpaper
- Completely seal porous substrates (sealer eliminates sandscratch swelling)
- Follow recommended primer film thickness
- Allow sufficient flash-off time between coats





Description: Coating does not cure within the usual time frame.

Probable Cause

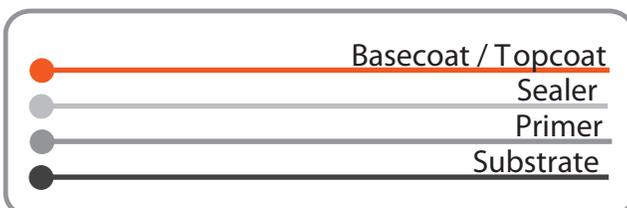
- Wrong amount of “B” component used
- too little or too much
- Insufficient flash-off time between coats
- Poor drying conditions: drying area too cool
- Solvent too slow
- Incorrect spray technique:
- Application too heavy

Remedy

- Drying area should be well ventilated and warm
- Drying may be accelerated by increasing booth temperature after spraying

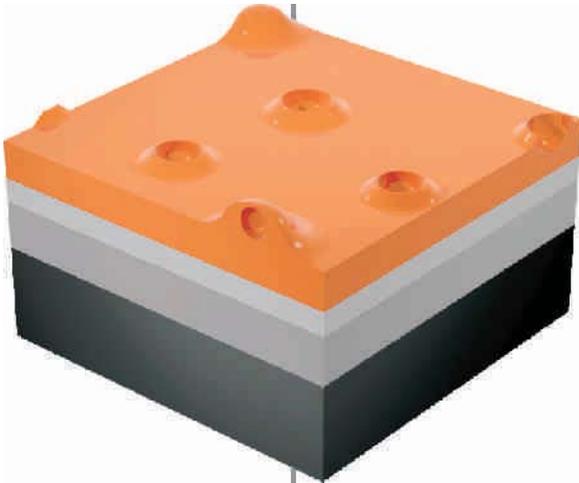
Prevention

- Use correct amount of Component “B”
- Use recommended thinner
- Use Endura Super Catalyst II as recommended
- Use a faster solvent system
- Follow film thickness recommendations
- Allow sufficient flash-off time
- Increase booth temperature after an adequate flash-off period



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Solvent Popping



Description: Small blisters or bumps on the paint film surface.

Identification

- Smooth blisters or bumps, some may have popped and appear as cratering
- Usually occurring on horizontal surfaces

Probable Cause

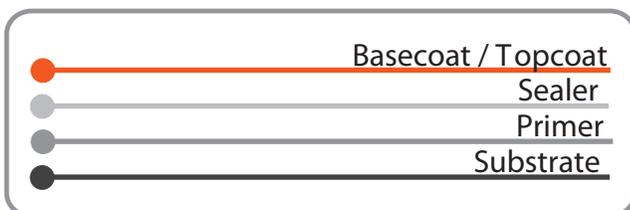
- Improperly cured polyester fillers
- Incorrect spray technique:
 - Application of the primer too heavy
 - Coating applied too dry
- Insufficient flash-off or drying time between coats
- Wrong thinner/reducer used
- Too much flash-off time before force drying
- Baking temperature too high
- Excessive use of Super Catalyst II

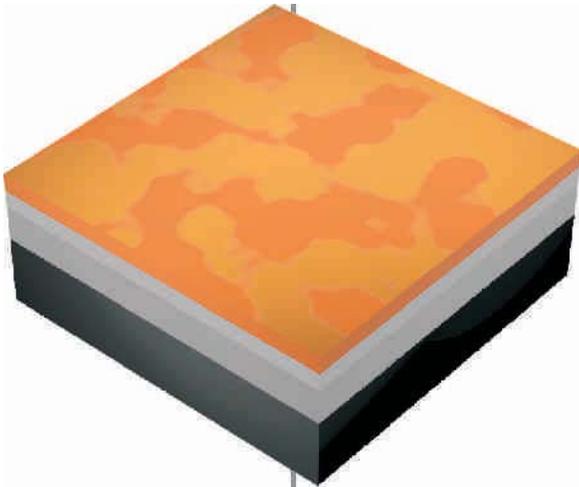
Remedy

- Minor problem:
 - Sand smooth
 - Apply sealer
 - Repaint
- Major problem:
 - Remove finish
 - Repaint

Prevention

- Ensure polyester type fillers are fully cured before priming
- Completely seal porous substrates
- Use correct solvent for conditions
 - slow solvent for hot conditions
- Follow recommended film build thickness
- Allow sufficient flash-off time between coats
- Flash-off time of 5-10 minutes before forced drying





Description: Patches of whitish discolouration on the paint film.

Identification

- Patchy areas may be:
 - Slightly indented
 - Dull, not glossy
 - Cloudy, whitish

Probable Cause

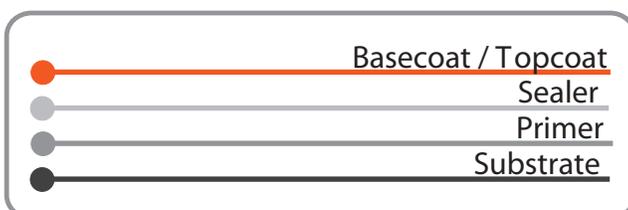
- Coating was exposed to moisture in the first 24 hours after painting
- Coating was washed before the finish was cured

Remedy

- Minor problem: polish
- Major problem:
 - Sand smooth
 - Repaint

Prevention

- Follow recommended cure times before washing or exposing to rain
- Increase spray booth temperature
- Use Endura Super Catalyst II in topcoats



Description: The film surface skins over and then swells, forming irregular ridges and creases.

Identification

- Paint film forms creases, folds, and slight ridges
- Film surface appears thick and leathery

Probable Cause

- Solvent sensitive enamel under topcoat or primer
- Primer or sealer not cured thoroughly
- Incorrect spray technique:
 - Application of topcoat too heavy
- Wrong amount of "B" component used - too little

Remedy

- Remove finish
- Apply sealer
- Repaint

Prevention

- Check solvent sensitivity - perform a solvent rub test on existing finishes
- Use sealers where appropriate
- Allow sufficient flash-off times between coats
- Use correct amount of Component "B"

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