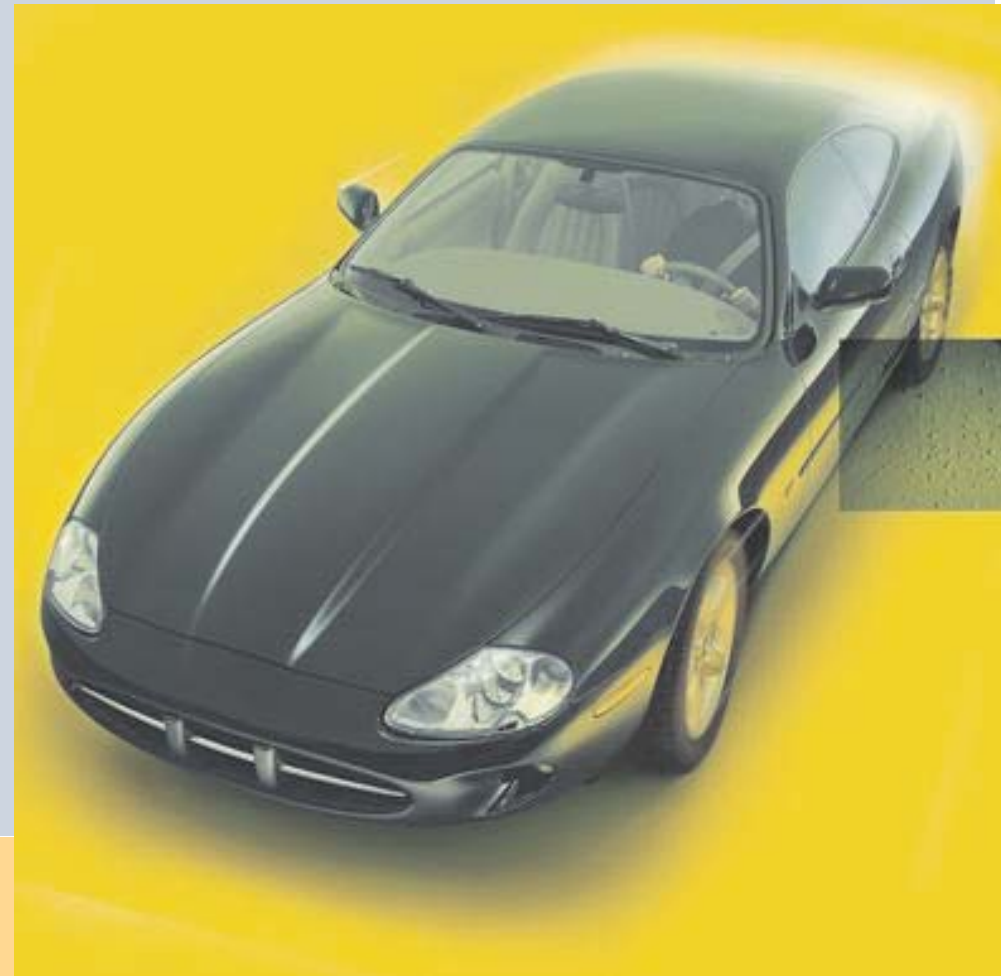


Paint Defects Advice

- Crinkling
- Swelling
- Blistering
- Bleeding
- Poor Coverage
- Spotting
- Industrial Fallout
- Loss of Gloss/Matting
- Loss of Adhesion
- Solvent Boil
- Pinhole Marks
- Cratering
- Scratches
- Chalking
- Runs
- Metamerism
- Orange Peel
- Polishing Marks
- Edge Marking
- Cracking, Crizzling
- Wrinkling
- Sanding Marks
- Dust Contamination
- Spraydust/Overspray
- Spraydust Clusters
- Stone Chips
- Corrosion, Rust
- Water Marking
- Clouding
- Faults in Painting Plastic



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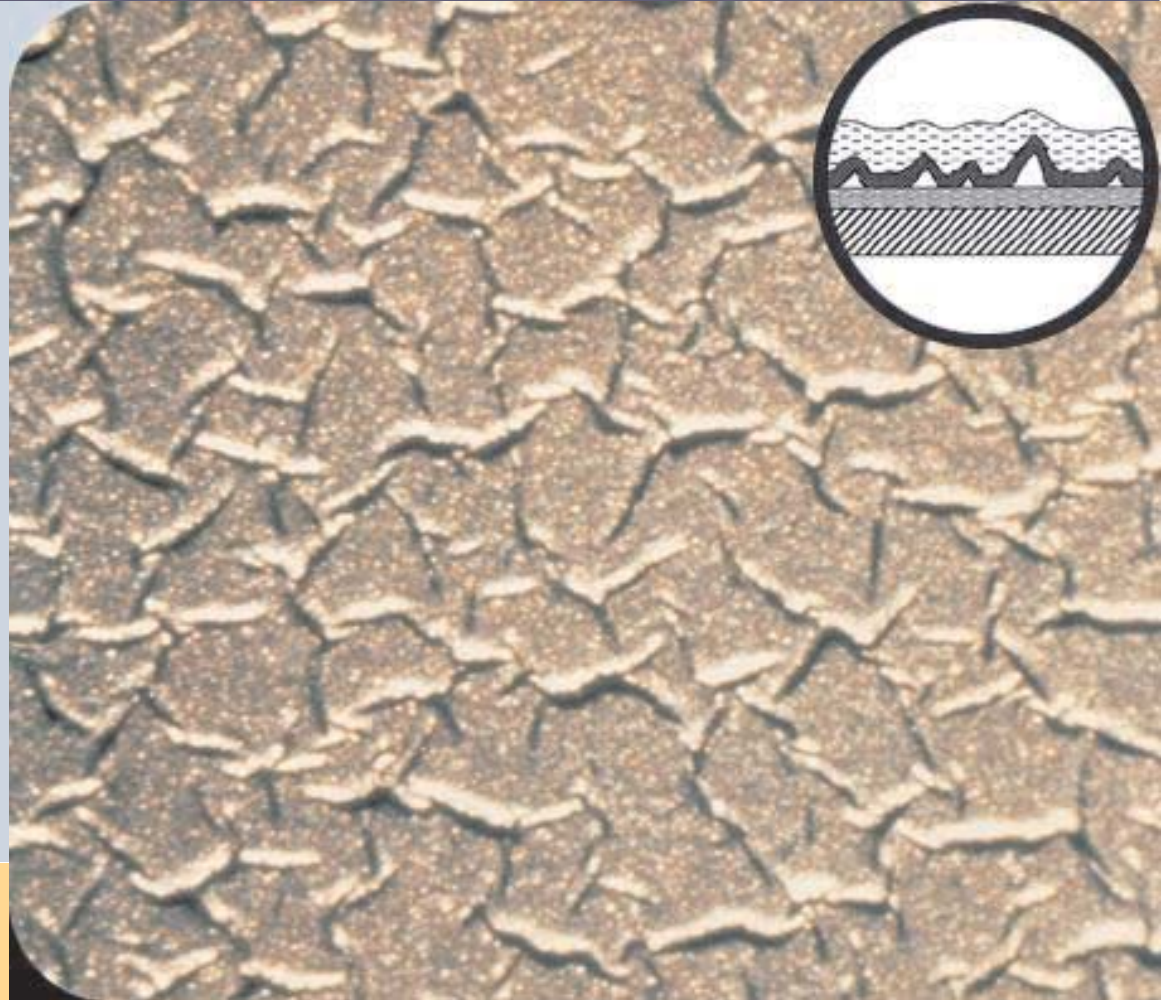
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Paint Defects Advice

Crinkling

Definition

Swelling and Lifting of the substrate layers when new paint is applied. Problem may appear during the painting process or on drying.



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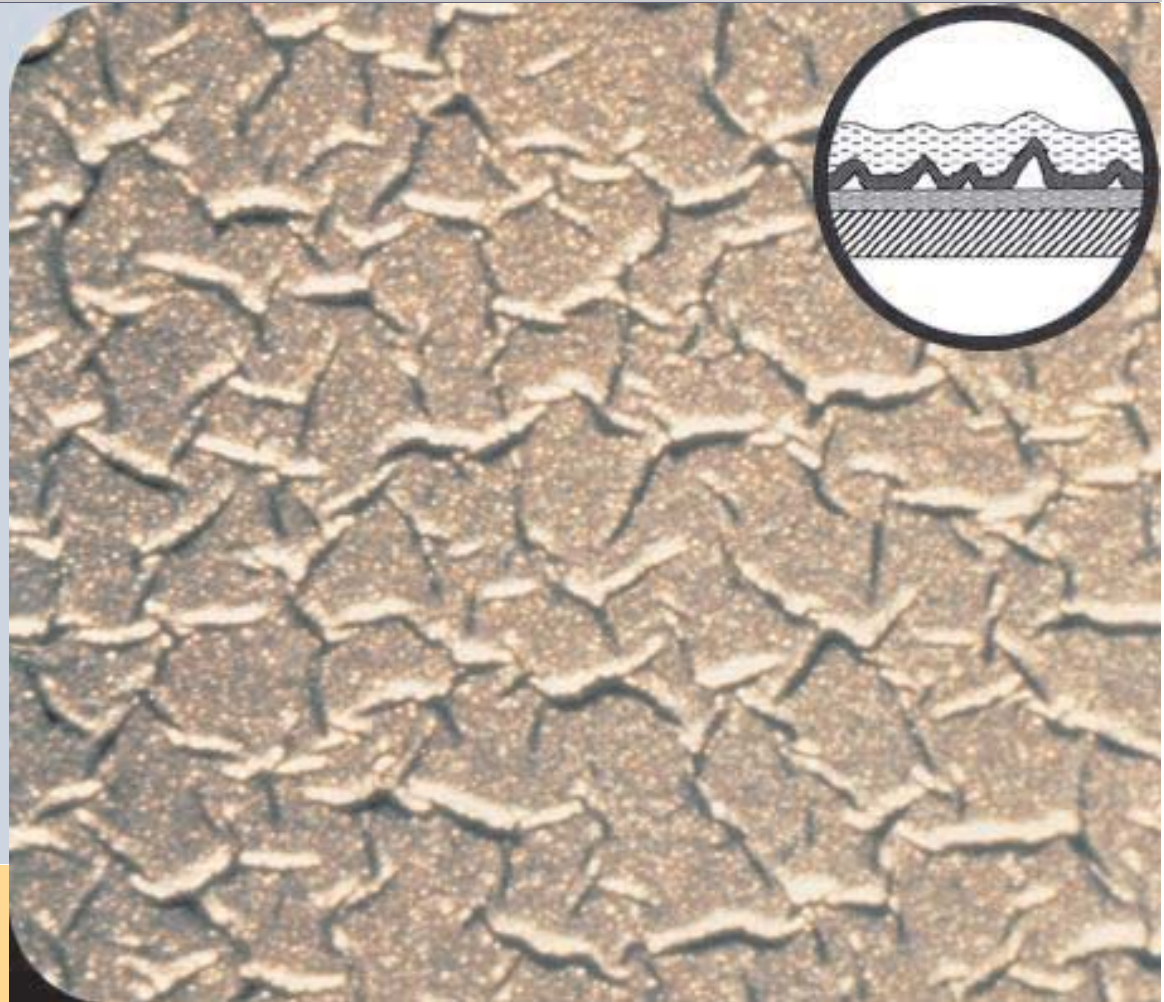
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Paint Defects Advice

Crinkling

Causes

- 1] Flash-off time too long when working wet-on-wet with some 2K-Products (recoating during Gel-phase).
- 2] Recoating solvent-sensitive layers (NC/TPA) with the wrong repair materials or when layers are too thick.
- 3] Coats used as a sealer are not thick enough (sprayed too thin or when sanded down too far).
- 4] Substrate layers not thoroughly dried.



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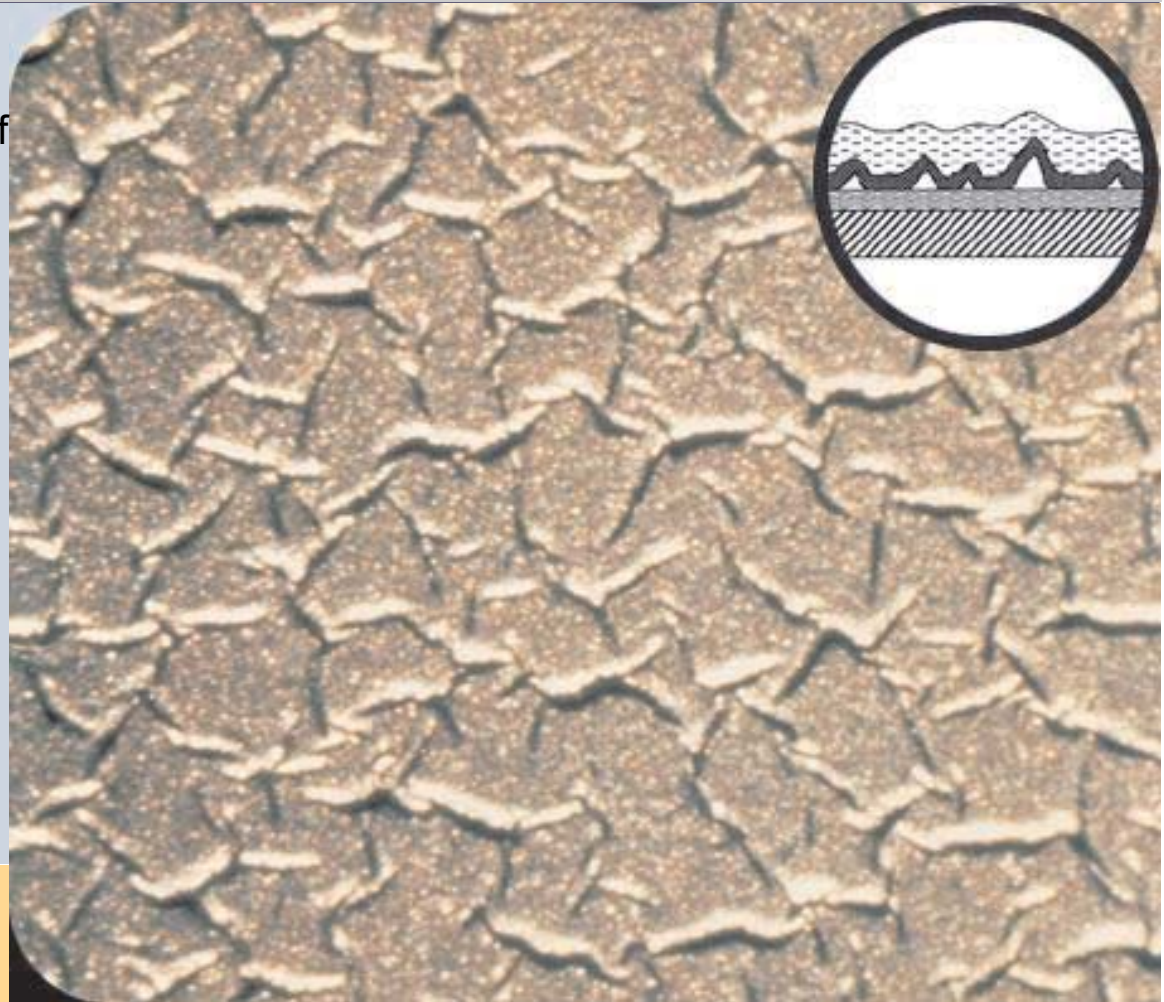
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Paint Defects Advice

Crinkling

How to Prevent

- 1] Always keep to the recommended Flash-off times.
- 2] Carry out a Solvent Test, use the correct repair process and use the correct film thickness.
- 3] Use the correct Film Thickness as advised in the product technical data.
- 4] Ensure that the substrate is dry. (Re-bake or use IR lamps)



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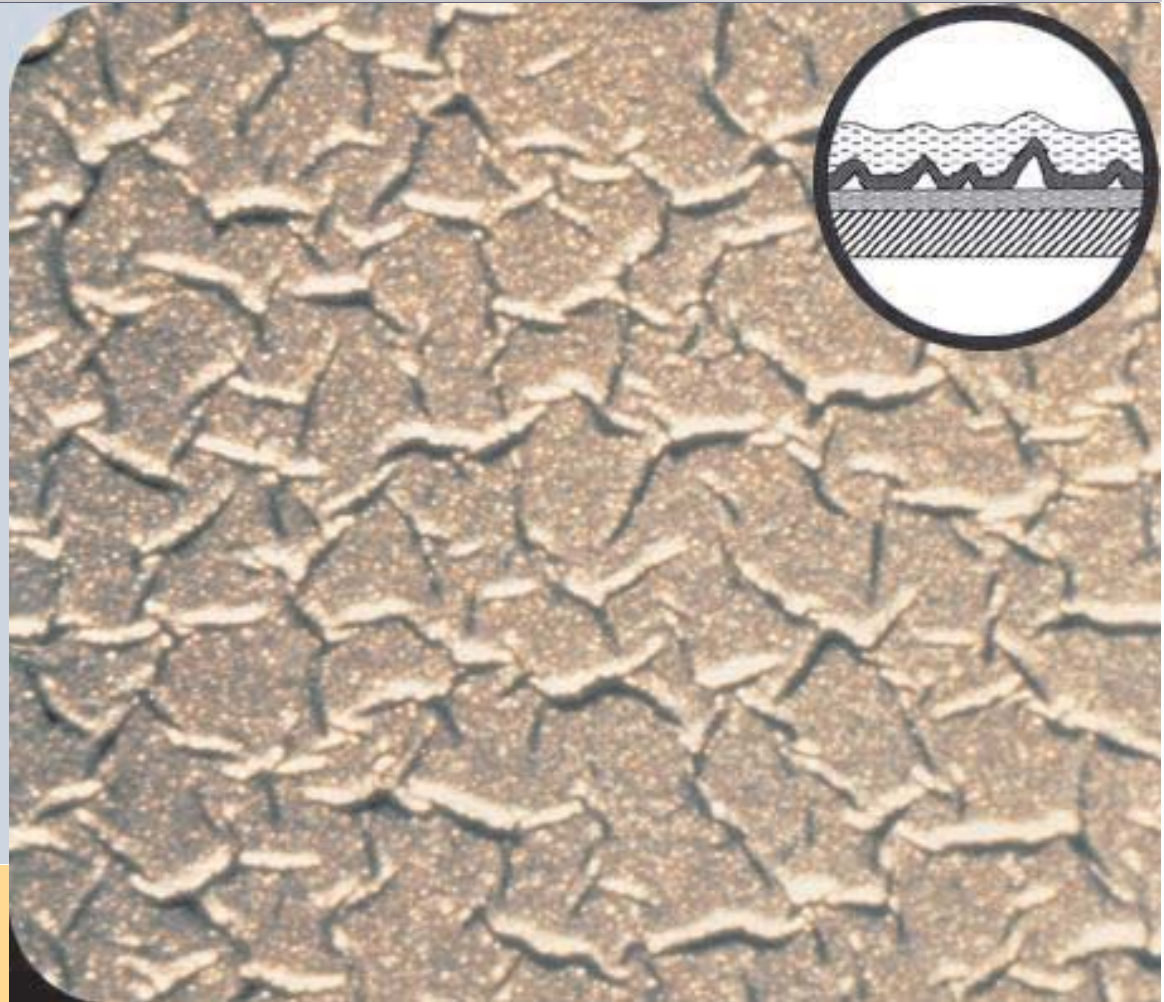
Paint Defects Advice

Crinkling

How to Repair

Sand down the paintwork back to a sound substrate. Rework using suitable Primer and Top Coats.

(If necessary be prepared to strip back to a sound substrate).



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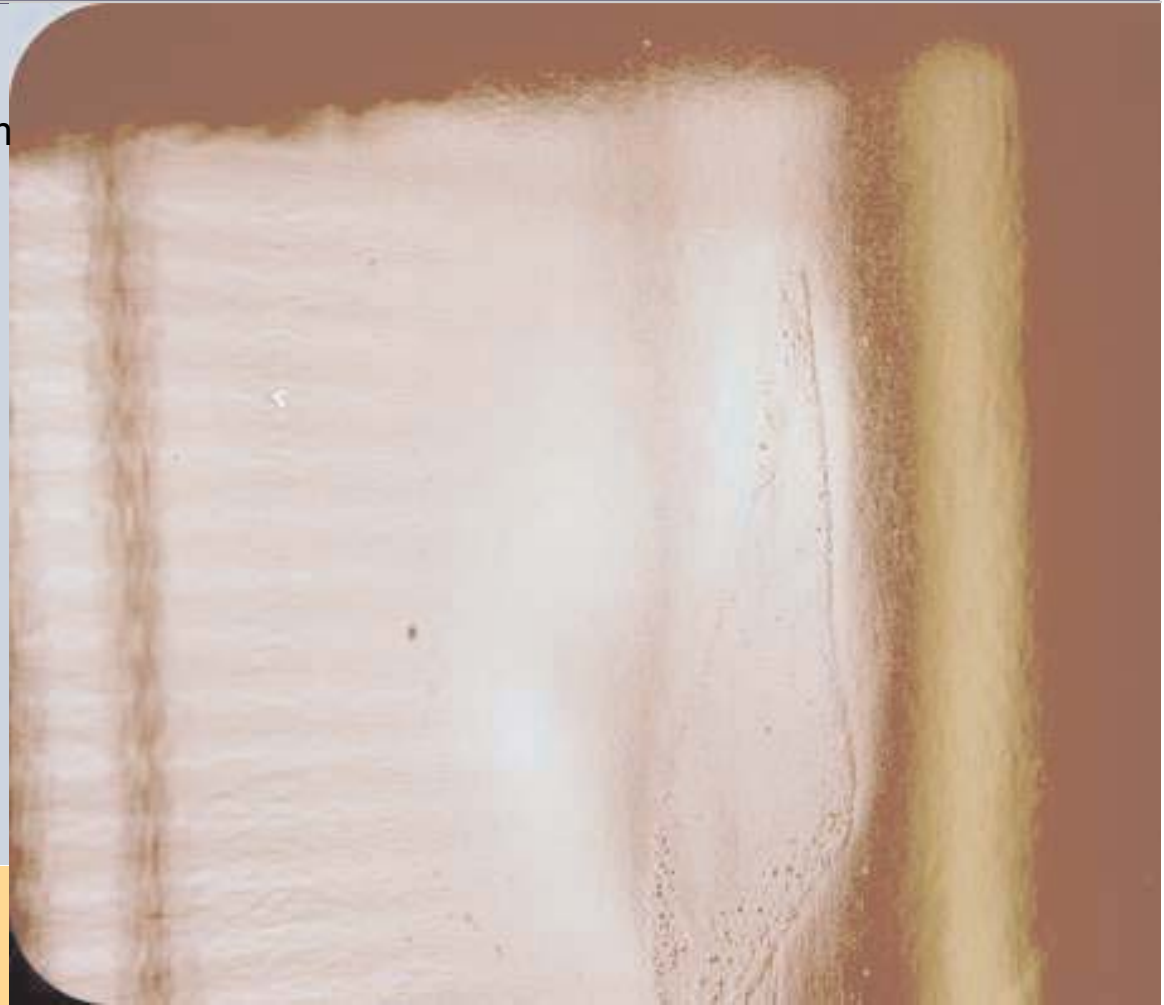
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Paint Defects Advice

Swelling

Definition

Very slow evaporation of residual solvent from a freshly painted paint process. This causes widespread swelling or sweating of the paint surface. Problem can lead to a reduction of gloss (hazing) and in small areas, edge zone marking (see chapter on "Edge-Zone Marking").



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Paint Defects Advice

Swelling

Causes

- 1) Drying time too short between layers in a complete process and/ or too high a film thickness of the filler coat within the process.
- 2) Filled areas are too thin or are not sufficiently isolated.
- 3) Swelling of solvent-sensitive substrates.
- 4) Incorrect quantity of hardener in Body-Filler or Filler coats.
- 5) Incorrect process when finishing over NC or TPA substrates.



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Paint Defects Advice

Swelling

How to Prevent

- 1] Always keep to recommended film thickness and drying times for each product. Where possible dry with infrared as this dries from the lower layers first.
- 2] Apply isolating coat in sufficient film thickness (circa 50 μm).
- 3] Before painting, carry out a solvent test with acrylic or NC Thinners. Sand feathered edges and surfaces finely (Body Filler with P80/ P150, Primer Filler with P240 - refer to technical information sheets).
Do not apply Body Filler over old paintwork which is solvent sensitive (better to apply to bare metal). Apply sprayfillers in thin spray coats and allow a good flash off between coats (to isolate). Use products with mild solvent properties (Waterbased fillers).
- 4] Only use specified mixing ratios.
- 5] Use Finishing Process S8..



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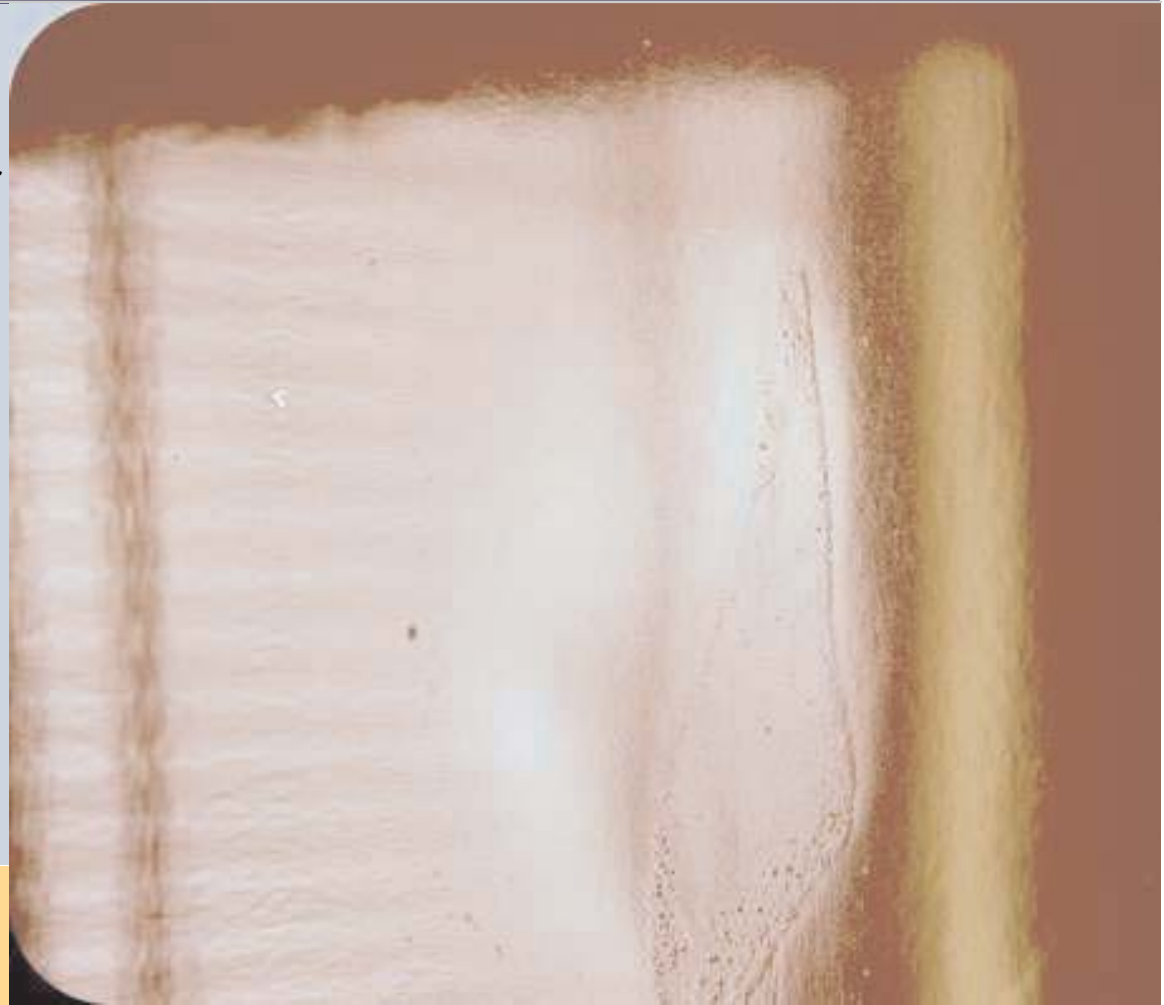
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Paint Defects Advice

Swelling

How to Repair

Thoroughly sand back, or remove the affected area. Refinish with the correct primer and/ or Top Coats.



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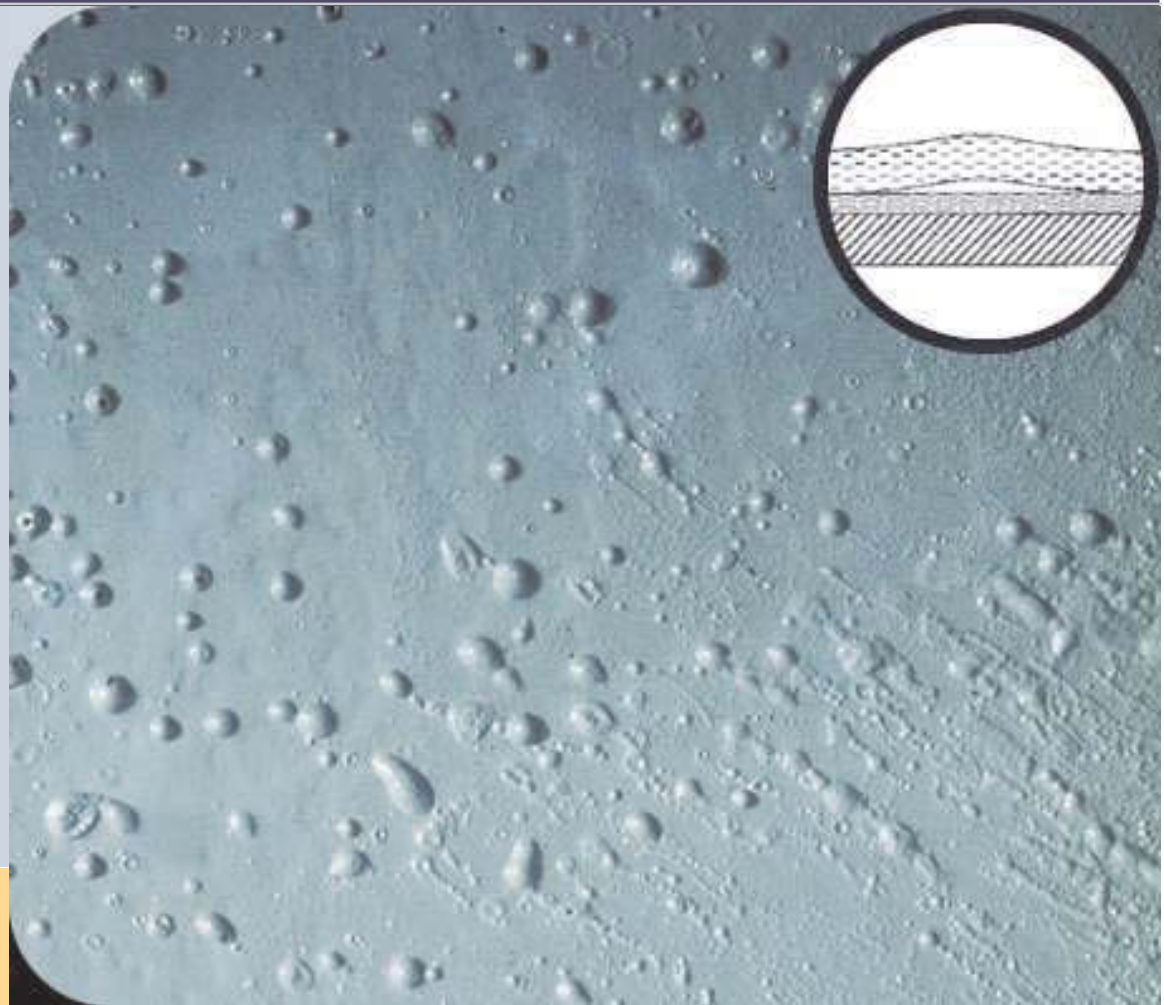
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Paint Defects Advice

Blistering

Definition

In damp weather, a small quantity of water vapour is absorbed into the paint structure and is then evaporated again in dry conditions (osmosis). This process is normal and does not harm a well constructed finishing process. However, poor processing of the primers will leave hygroscopic/water soluble substances (salts) behind as contaminants. These cause a local concentration of a salt water solution which lift the paint film into water blisters. Blisters can occur in many sizes, patterns and frequency and can form between individual layers or beneath the entire film build. In dry weather most blisters will temporarily recede.



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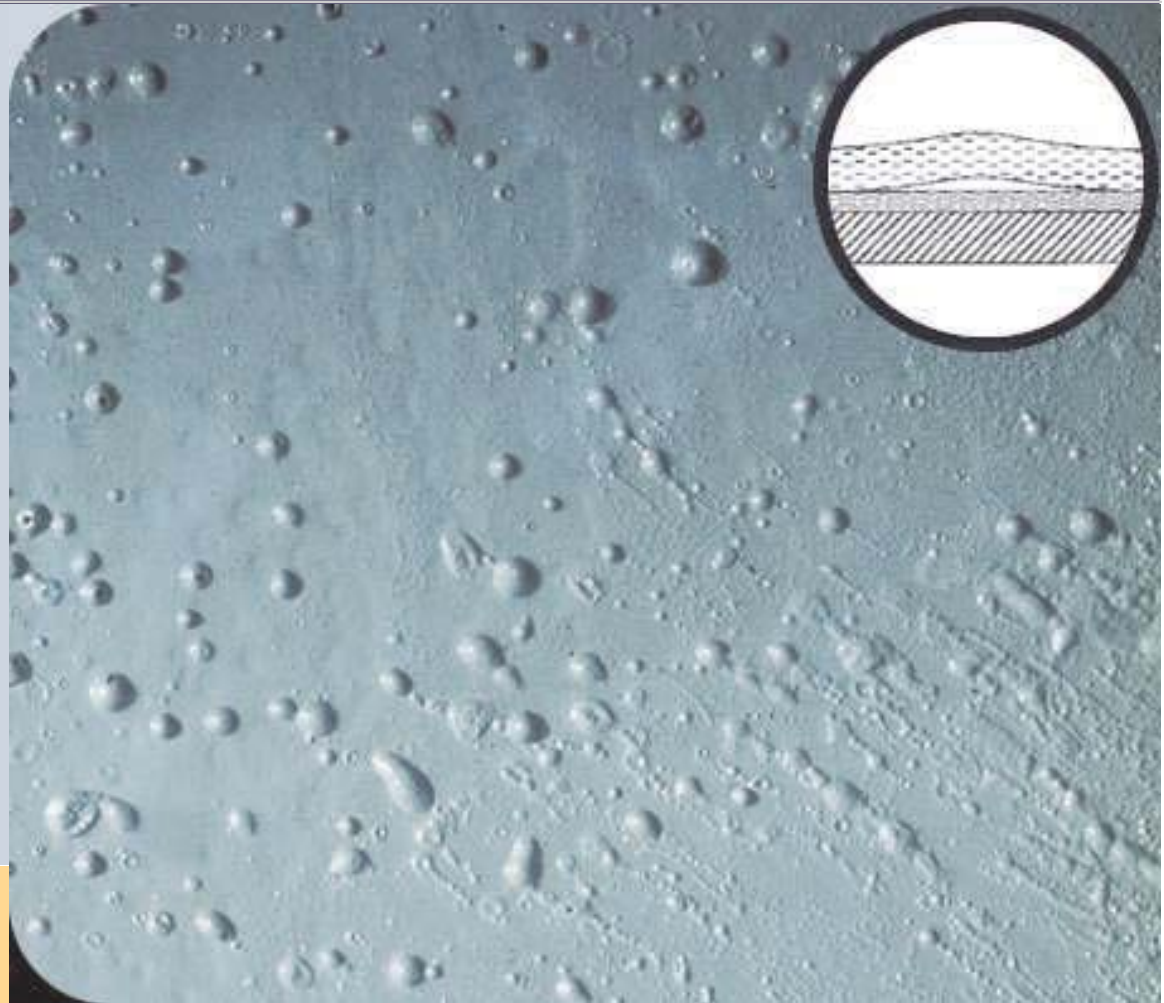
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Paint Defects Advice

Blistering

Causes

- 1] The surface to be painted (filler, bare metal etc) was not cleaned thoroughly. Contamination from salt residue, eg dirty sanding water or hand sweat, was left on the surface under or between coats. The blister pattern may indicate the cause (beading = wipe marks, prints = finger or hand prints).
- 2] Wet sanding operations (particularly with polyester based products) without sufficient time to allow water to evaporate before application of top-coats.



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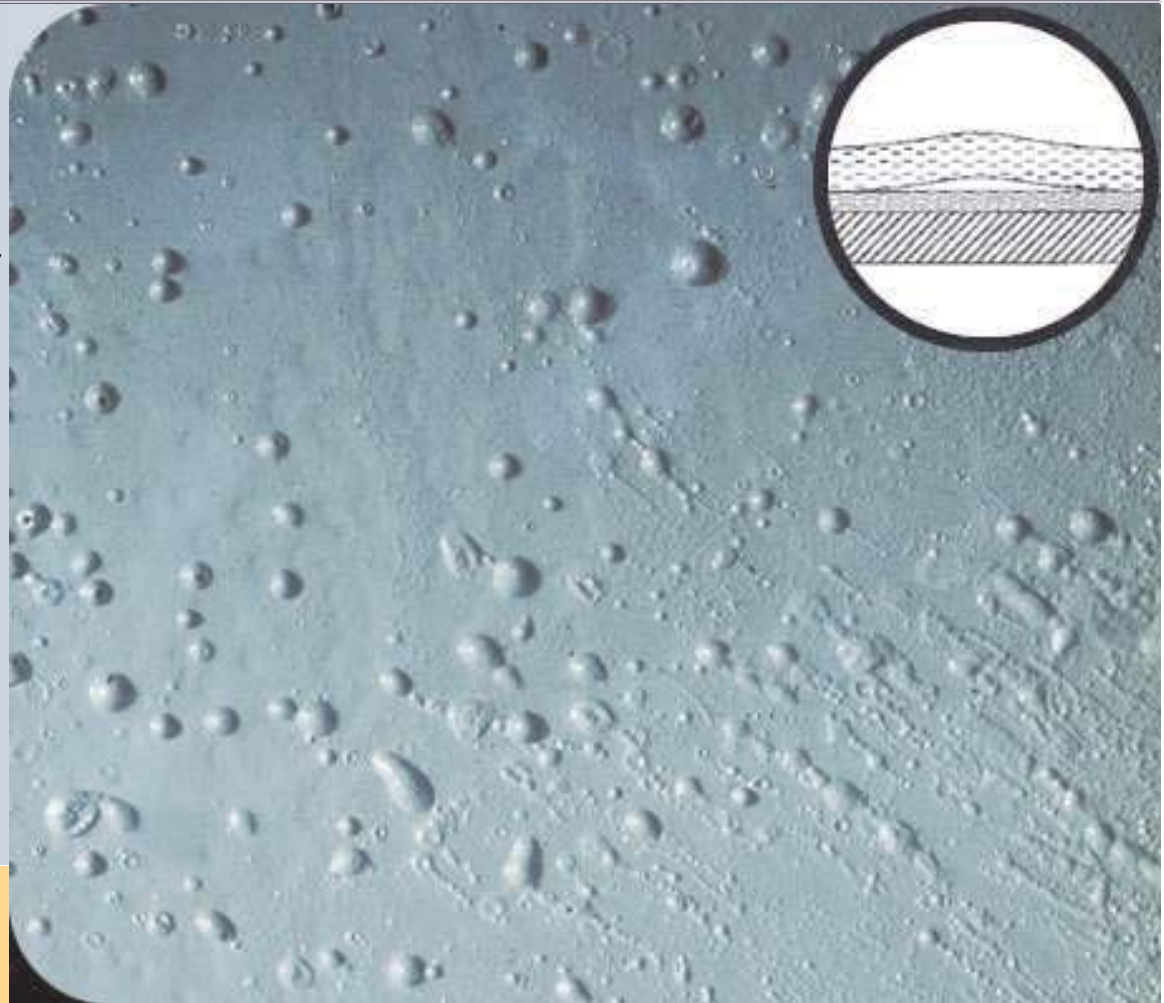
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Paint Defects Advice

Blistering

How to Prevent

- 1] Thoroughly clean the areas to be painted with clean water. Change sanding and cleaning water regularly, especially in winter when vehicle paintwork in for repair is covered in salt. Consider changing to dry sand operations to avoid water absorption when sanding. Finally (depending on the substrate) clean the area with an appropriate cleaner.
- 2] Allow sufficient time for water to evaporate when wet sanding (circa 2 hours at 20°C). Dry sand where possible especially with polyester based products.
- 3] Ensure booth is dry before painting. In cold damp conditions run the booth on bake before any paint processing operations.



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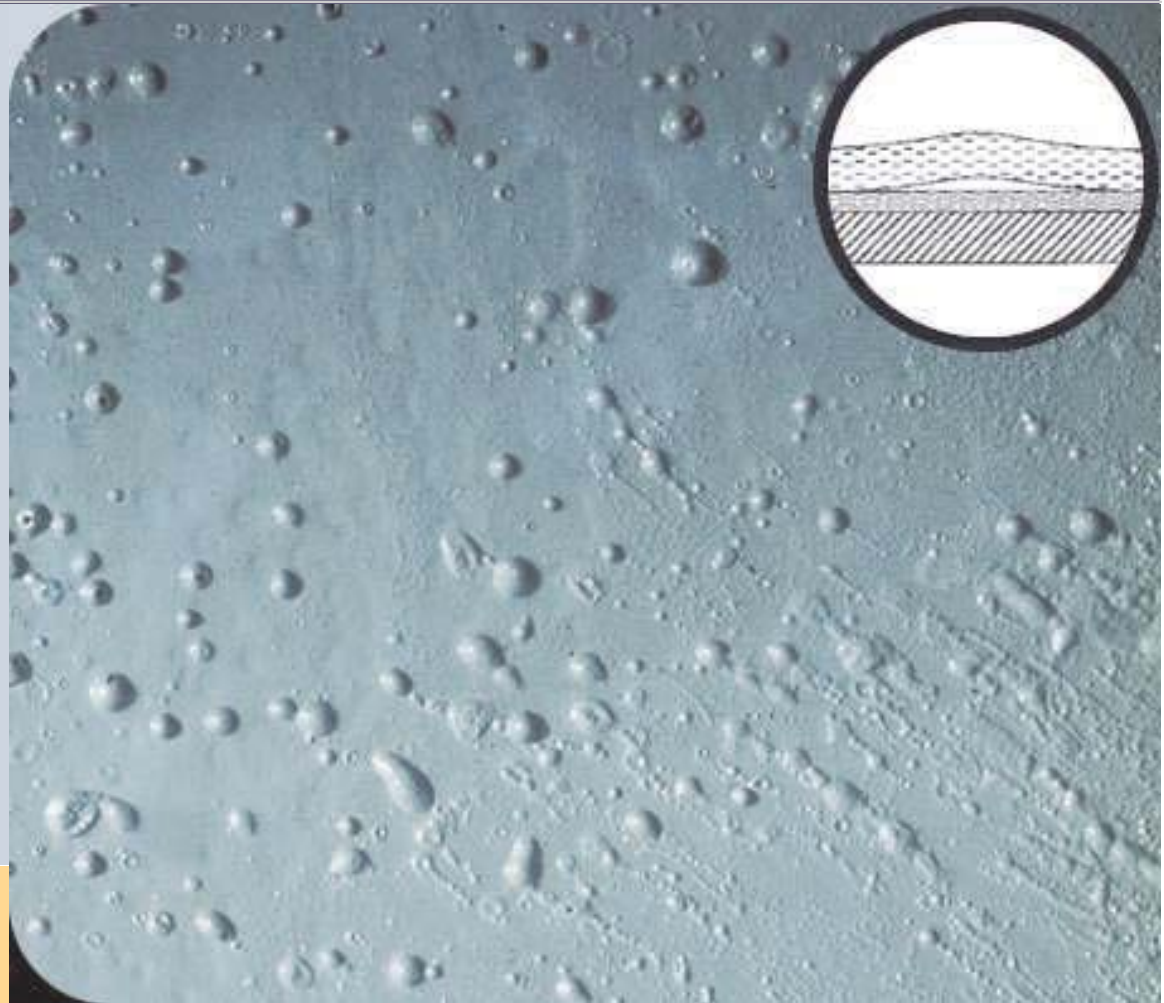
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Paint Defects Advice

Blistering

How to Repair

Sand down and remove the paint layers back to a sound substrate. Be prepared to strip the areas back to bare metal where necessary. Refinish with the correct choice of primers fillers and top-coats.



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Paint Defects Advice

Bleeding

Definition

Bleeding is the staining or seeping through of a soluble dye from the substrate through the top coat colour. Bleeding is normally observed as spots or patches of discoloration in the top coat, (often in red or yellow colours). Excess peroxide hardener in a polyester filler can also cause similar marks due to a chemical reaction with the colour pigments.



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Paint Defects Advice

Bleeding

Causes

- 1] Soluble pigments or dyes from the old paintwork are dissolved in the solvent of the repair materials, and change in the shade at the surface.
- 2] Bleeding can also occur when excessive peroxide from a polyester filler reacts with the pigments in the repair materials causing a yellow-brown stain mark. Blue and green colours are particular vulnerable this problem.
- 3] Residues from Bitumen or Tar if not cleaned off thoroughly.



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Paint Defects Advice

Bleeding

How to Prevent

- 1] Carry out a solvent test to check if a soluble dye exists. Soluble dyes have not existed in any paintwork or repair paints for many years.
- 2] Only use the recommended quantity of peroxide hardener when mixing polyester products and mix the hardener in evenly and thoroughly. Never allow the coloured hardener to look streaky in the filler when applied.
- 3] Before painting ensure all contamination, especially bitumen and tar deposits, are thoroughly removed.



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Paint Defects Advice

Bleeding

How to Repair

To repair a bleed-through area, the whole area should be isolated with an appropriate sealer, and appropriate primer. If the bleed through is severe then the paint layers should be removed back to a sound substrate and then refinished with the correct primer and top-coat process.



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Paint Defects Advice

Poor Coverage

Definition

Substrate showing through the top-coat. Old paintwork, spot primer or areas of filler are visible through the top-coat.



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Paint Defects Advice

Poor Coverage

Causes

- 1] Substrate not coloured to similar even shade.
- 2] Poor covering shade (e.g. no heavy metal pigment).
- 3] Top-coat over-thinned.
- 4] Top-coat not stirred properly before use.
- 5] Paint coats were applied too thin.



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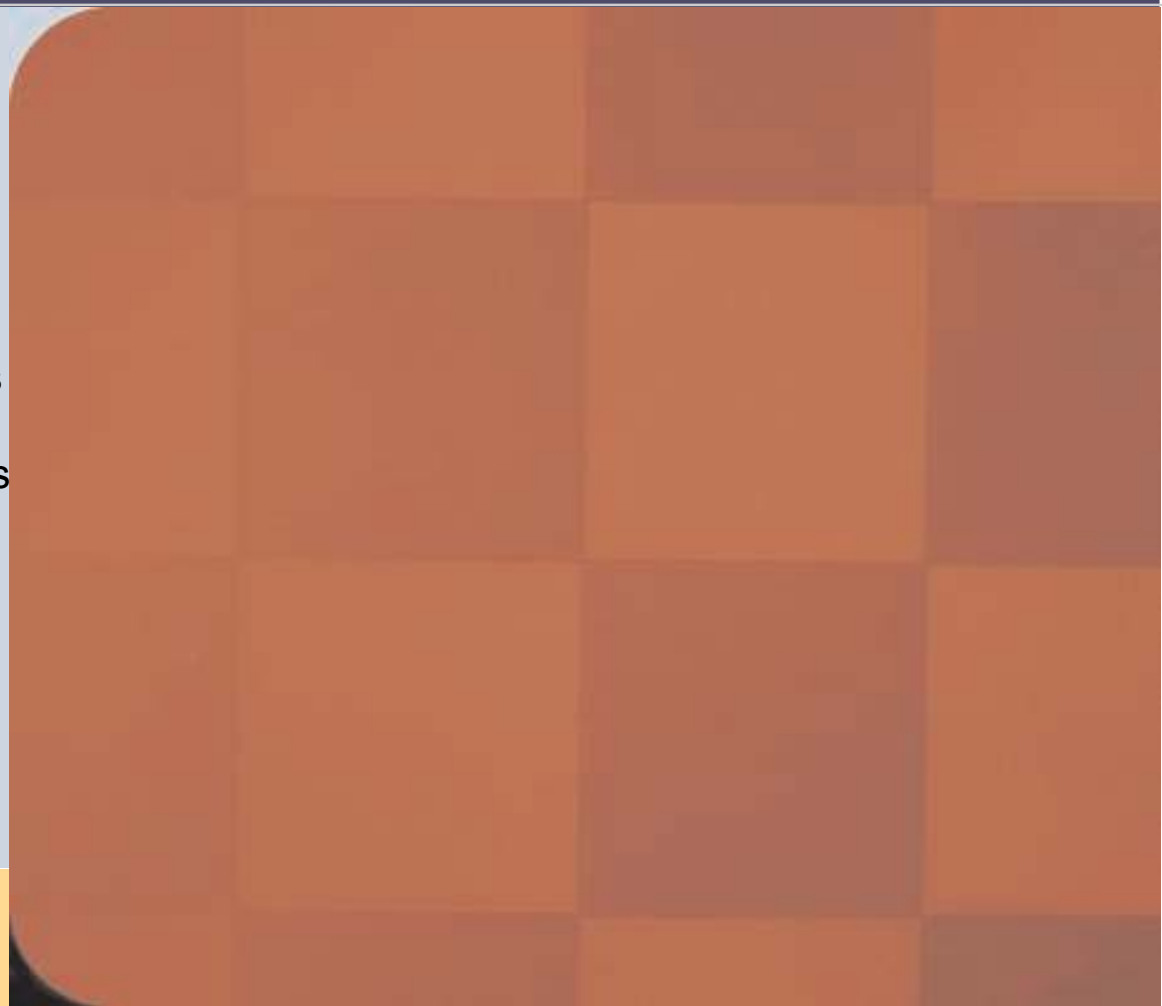
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Paint Defects Advice

Poor Coverage

How to Prevent

- 1] A uniform substrate is required, especially when using translucent colours (e.g. when using 3-coat pearl effect systems)
- 2] For poor covering colours, use a tinting filler.
- 3]+4] Stir base colours thoroughly and always thin as per specification.
- 5] Spray sufficient film thickness (solid colours 50-70 microns, Metallic basecoats 15-25 microns). Alternative for water-based colours: - spray a thin adhesion coat - blow dry - finish with 2 spray coats.



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Paint Defects Advice

Poor Coverage

How to Repair

After drying, sand down and repaint.



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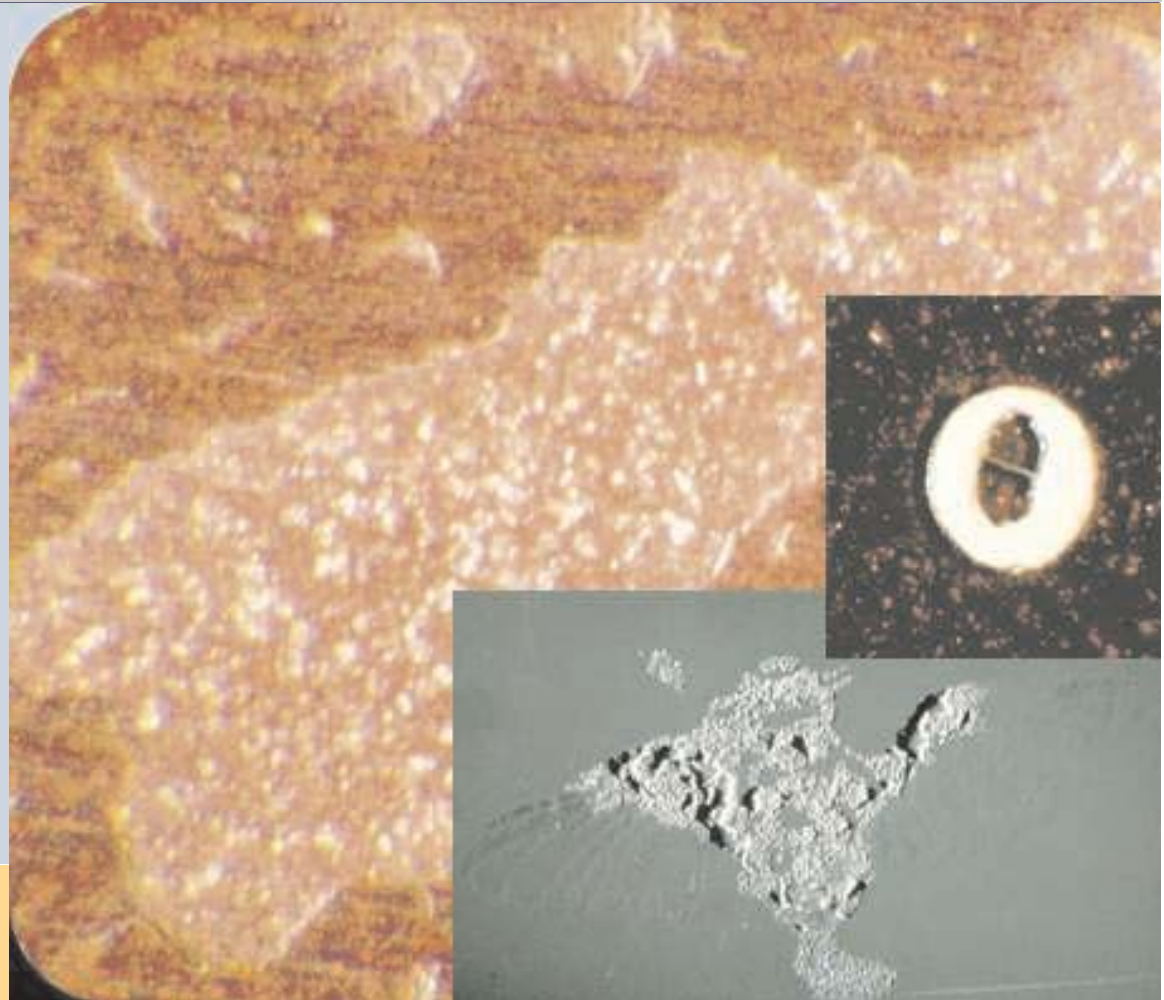
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Paint Defects Advice

Spotting by External Sources

Definition

Physical attack or discolouration of the paint surface due to various causes; the spots take various shapes, colours and sizes.



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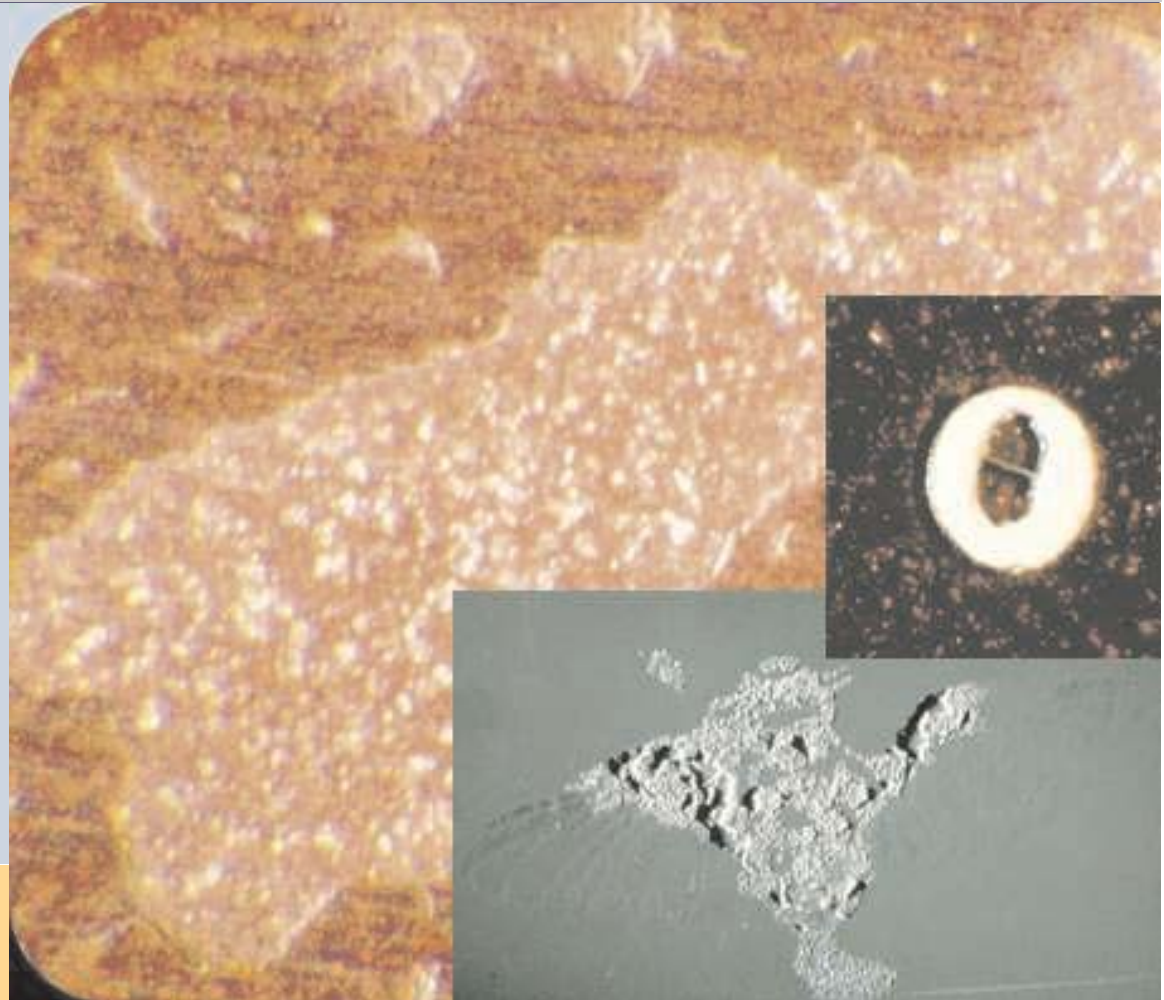
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Paint Defects Advice

Spotting by External Sources

Causes

- 1] Tar - Dirty, brown-black spots.
- 2] Industrial waste gas, e.g. SO₂ - Large area or spot area gone matt.
- 3] Acid Rain - No short-term visual effect, but can go matt.
- 4] Acid (Battery) - Usually destroys the entire paint build down to the metal.
- 5] Tree Sap - Thread-like and droplet shaped, sometimes clear and sometimes brown-yellow marks with swelling.
- 6] Insects - Marks of insect bodies visible in the paint surface.
- 7] Insects Secretions - Bee-droppings: long yellow brown marks. Greenfly excrement: round, ring-like etchings.
- 8] Bird-Droppings - Appearance can vary depending on the type of bird, weather conditions and duration of contamination.



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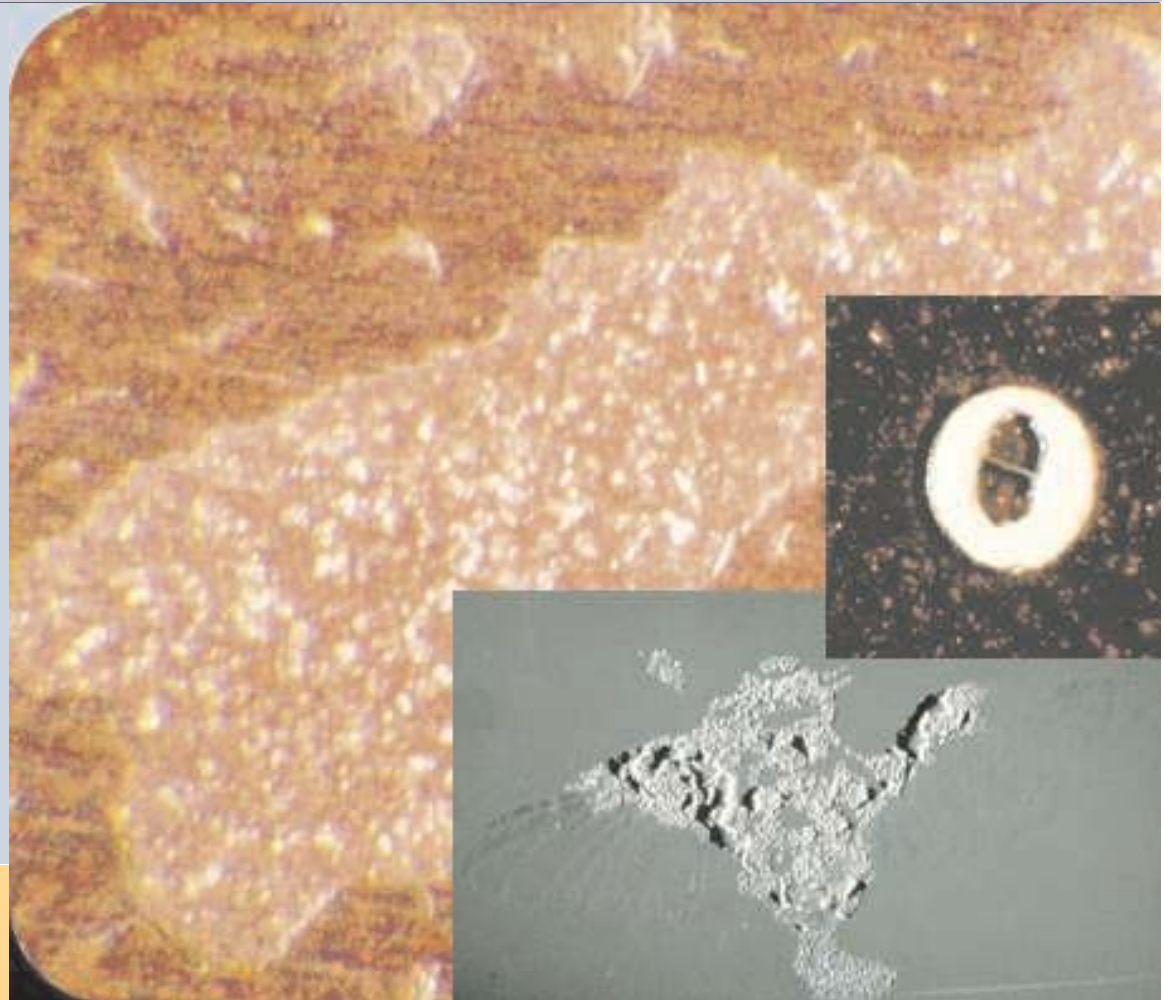
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Paint Defects Advice

Spotting by External Sources

How to Prevent

Remove all foreign bodies and matter from the paintwork as soon as possible. Wash off tar and tree sap using appropriate cleaner. Remove all other contamination with water. Regular paintwork aftercare is required (washing, polishing, wax protection etc).



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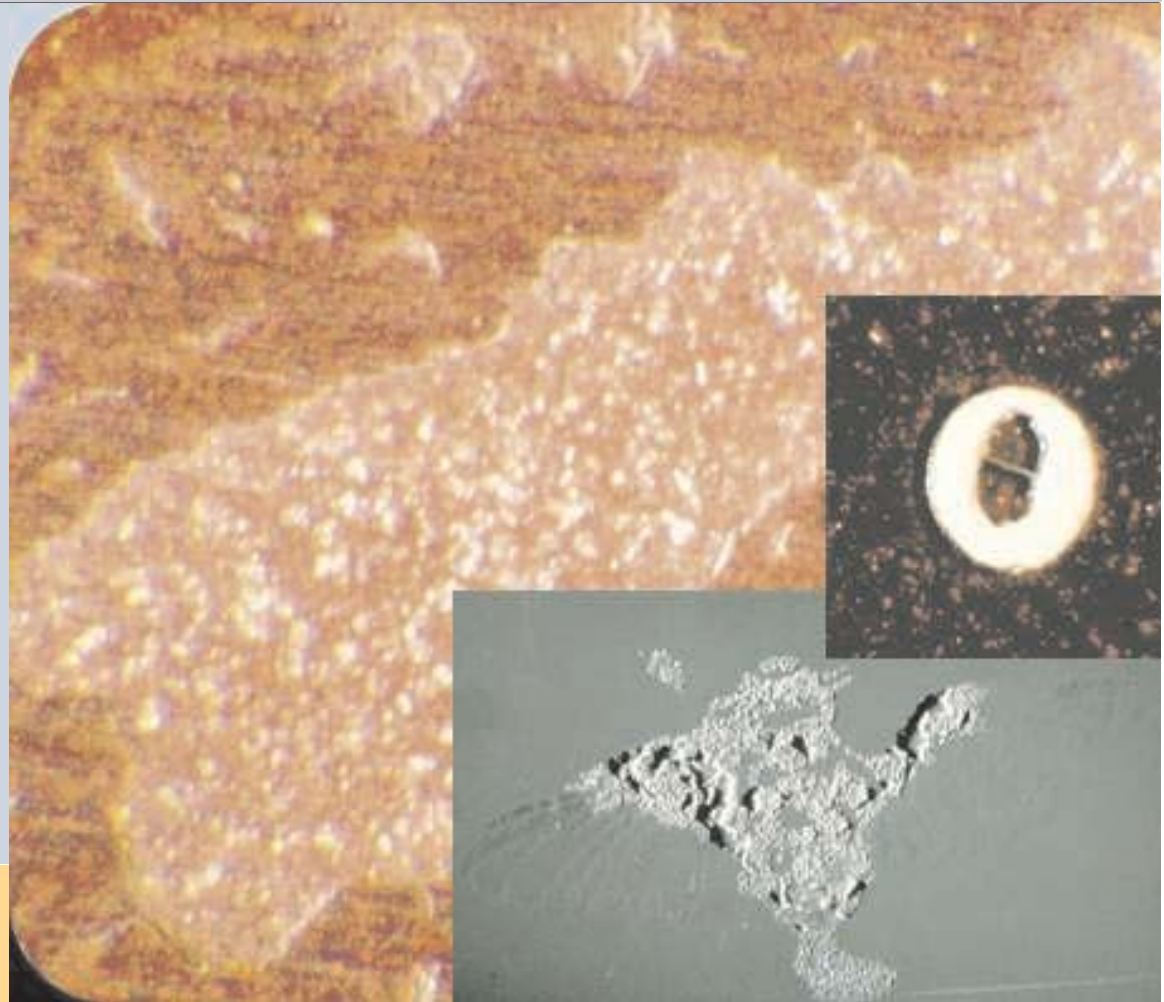
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Paint Defects Advice

Spotting by External Sources

How to Repair

Depends on the amount of damage. For damage to the top-coat, first attempt to polish out the problem using Polishing Paste and finish with a High Gloss Polish. As a second attempt, sand the area with P1200 and then repeat as for the first attempt. For major damage, sand down to a sound substrate and repaint as necessary.



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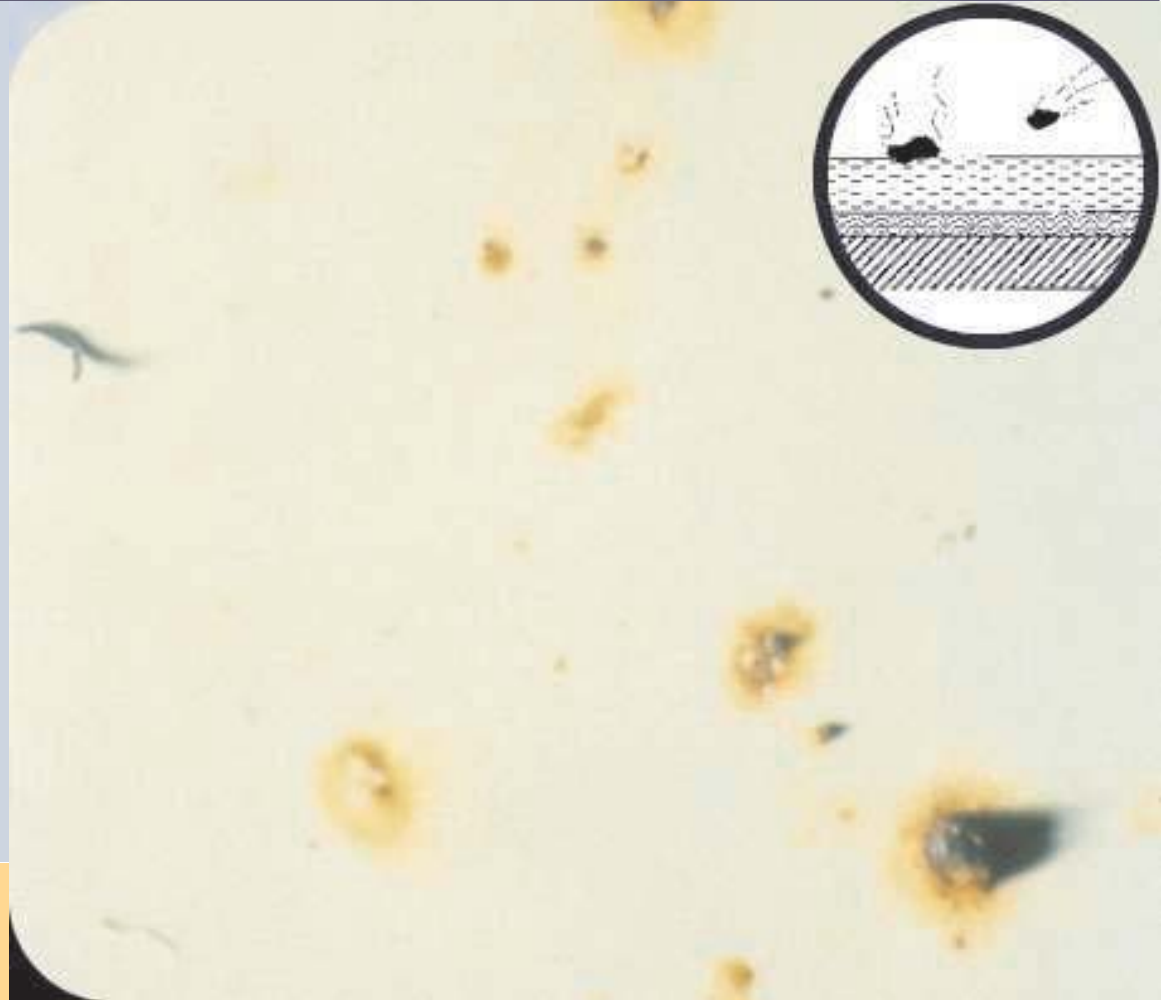
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Paint Defects Advice

Industrial Fallout

Definition

Spots of corrosion on top of the paint surface



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Paint Defects Advice

Industrial Fallout

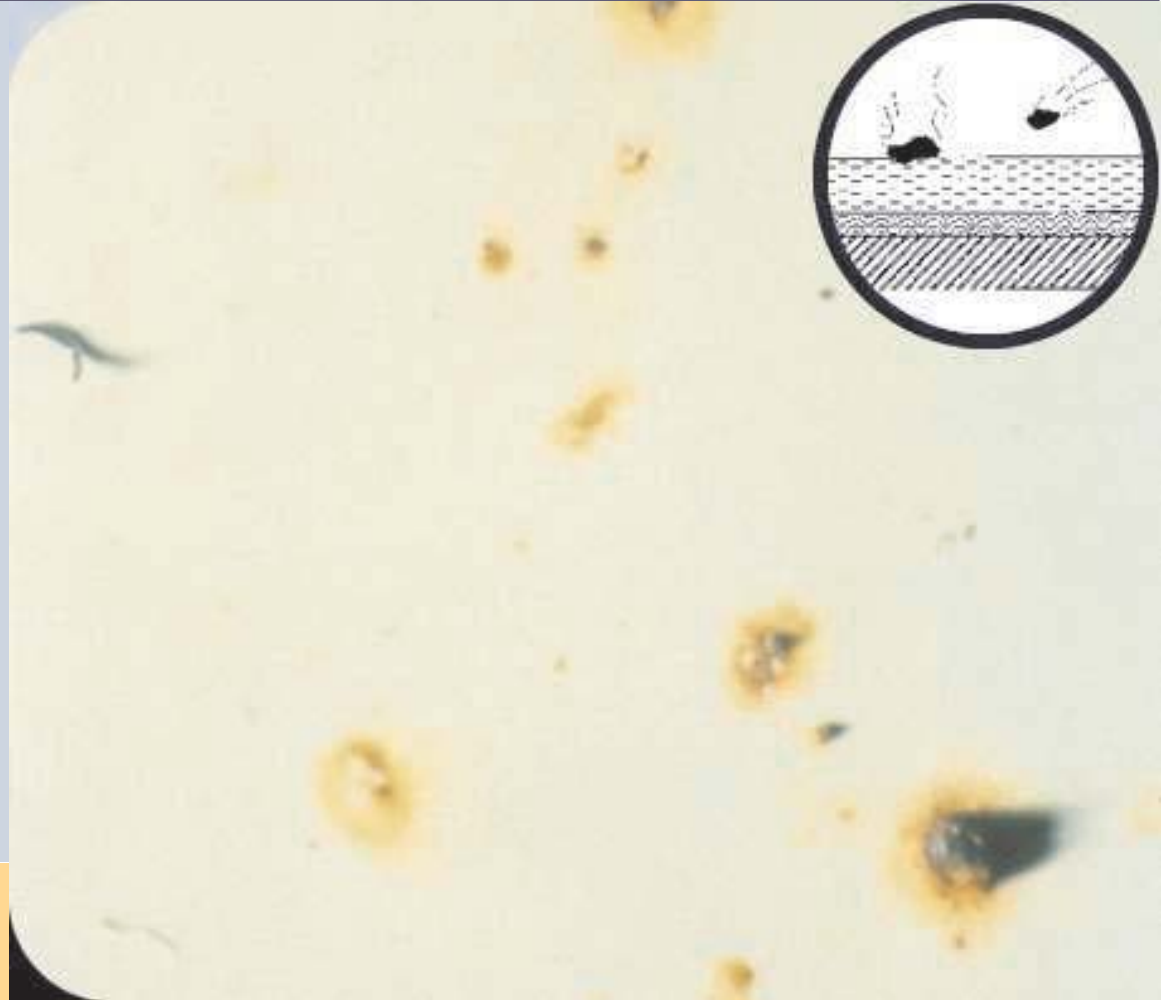
Causes

Industrial Dust

Corrosive deposits from chimneys of foundries and ironworks. Rail and road chippings. Iron particles, which mainly occur on top flat surfaces, oxidise in moisture and humidity and then attack the paint surfaces.

Spark Damage

Ash from overheated electricity cables on tramways and railways. Spark damage from welding and grinding operations. The hot and sometimes glowing, particles of iron burn into the paint surface.



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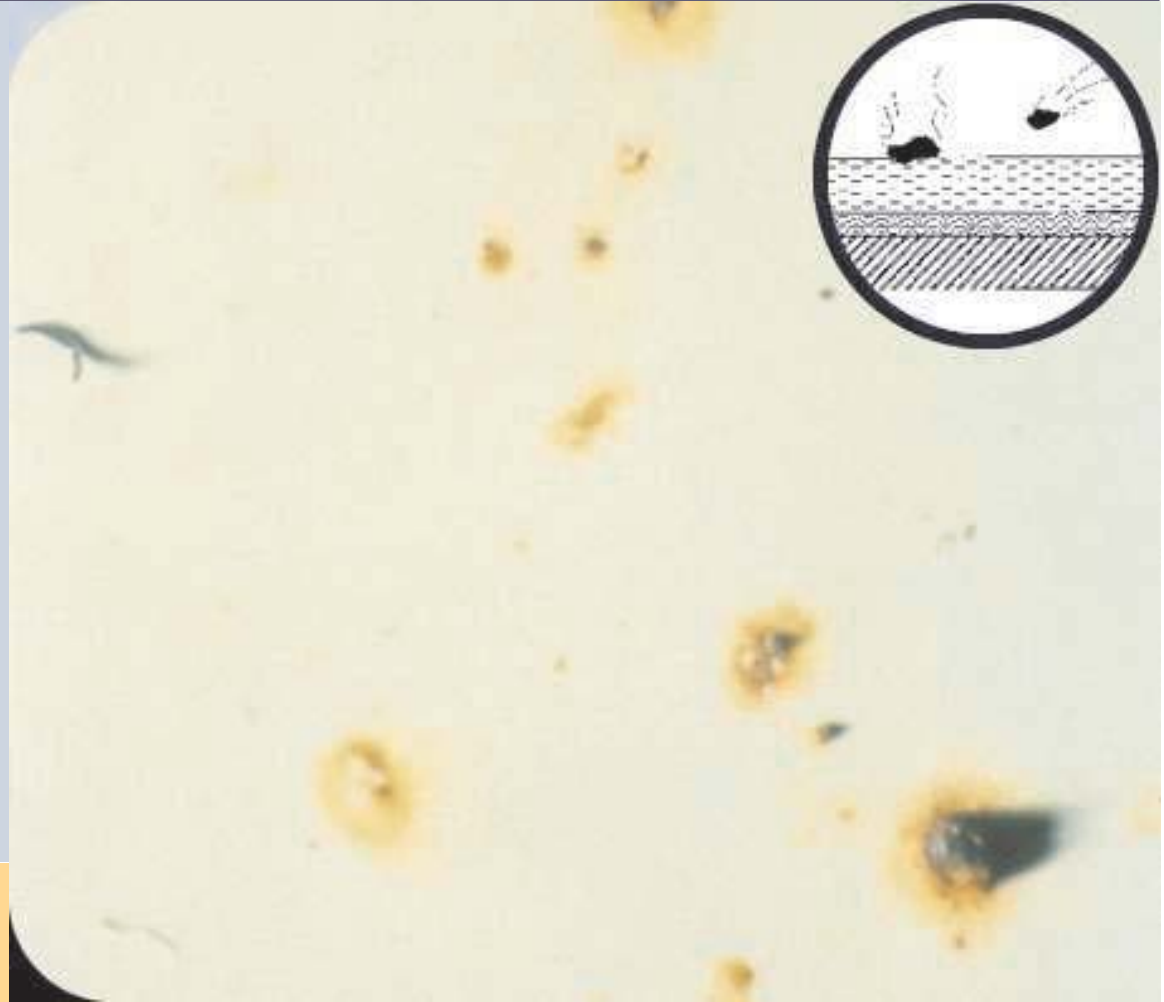
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Paint Defects Advice

Industrial Fallout

How to Prevent

Immediate removal of the metal particles and regular maintenance by polishing and waxing will help to avoid the problem. Where welding or grinding work is being carried out, ensure that all vehicles adjacent to or near the work are fully covered to protect them.



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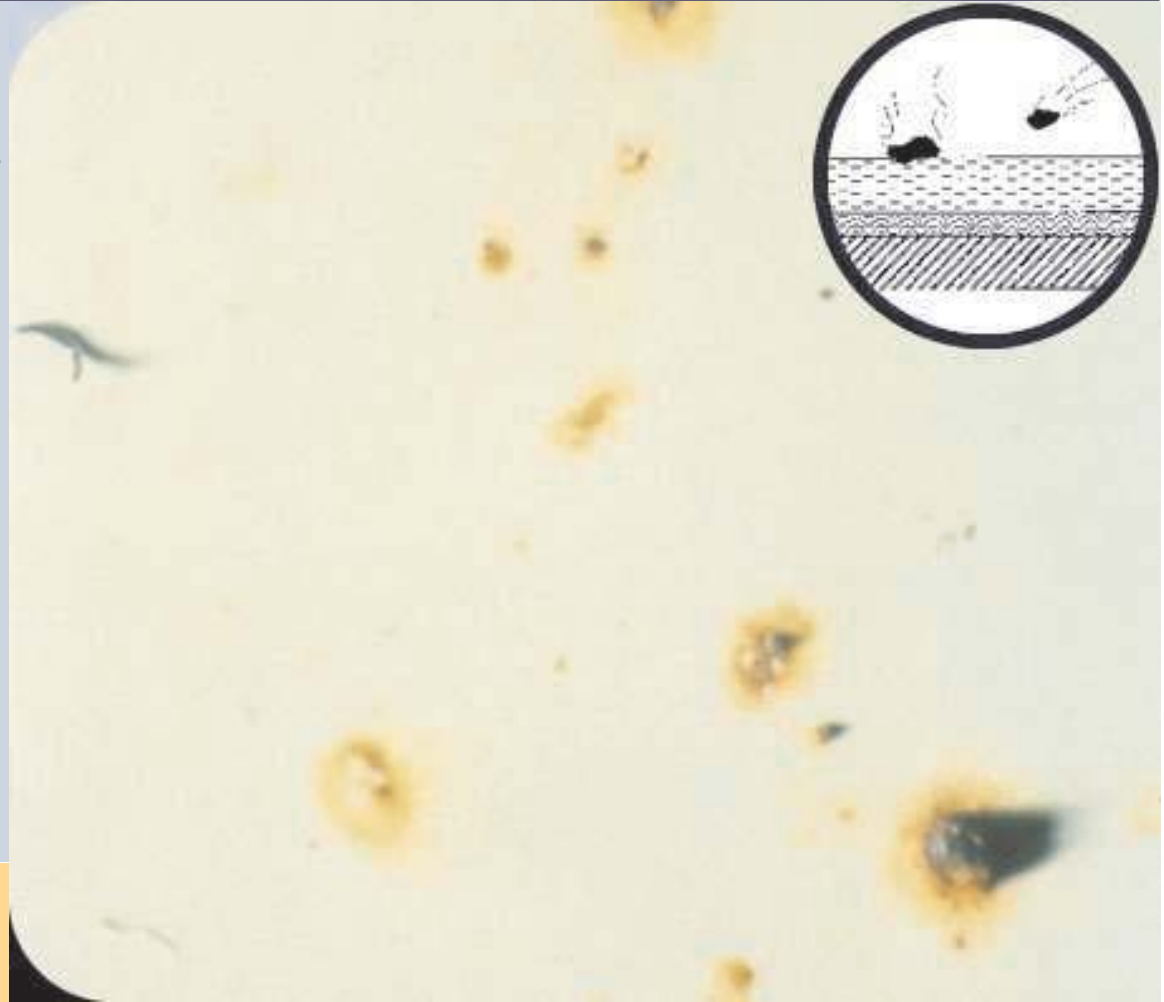
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Paint Defects Advice

Industrial Fallout

How to Repair

Use a metal dust remover and finish off by polishing the surface with a polishing paste. If the metal particles are deeply etched into the paint surface, sand down the affected areas with P1200 and then polish with a polishing paste.



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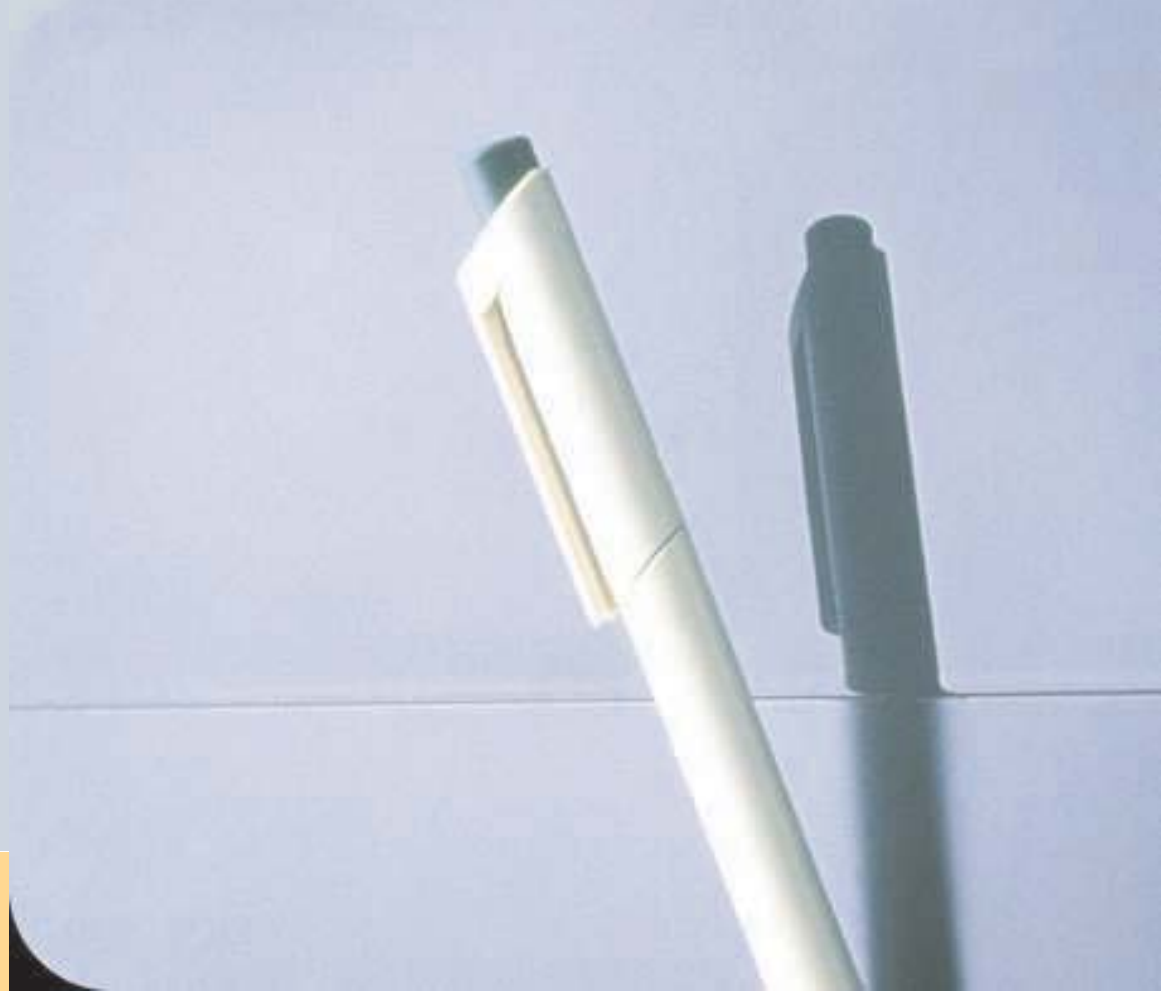
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Paint Defects Advice

Loss of Gloss/Matting

Definition

Matt or matted paint surfaces.



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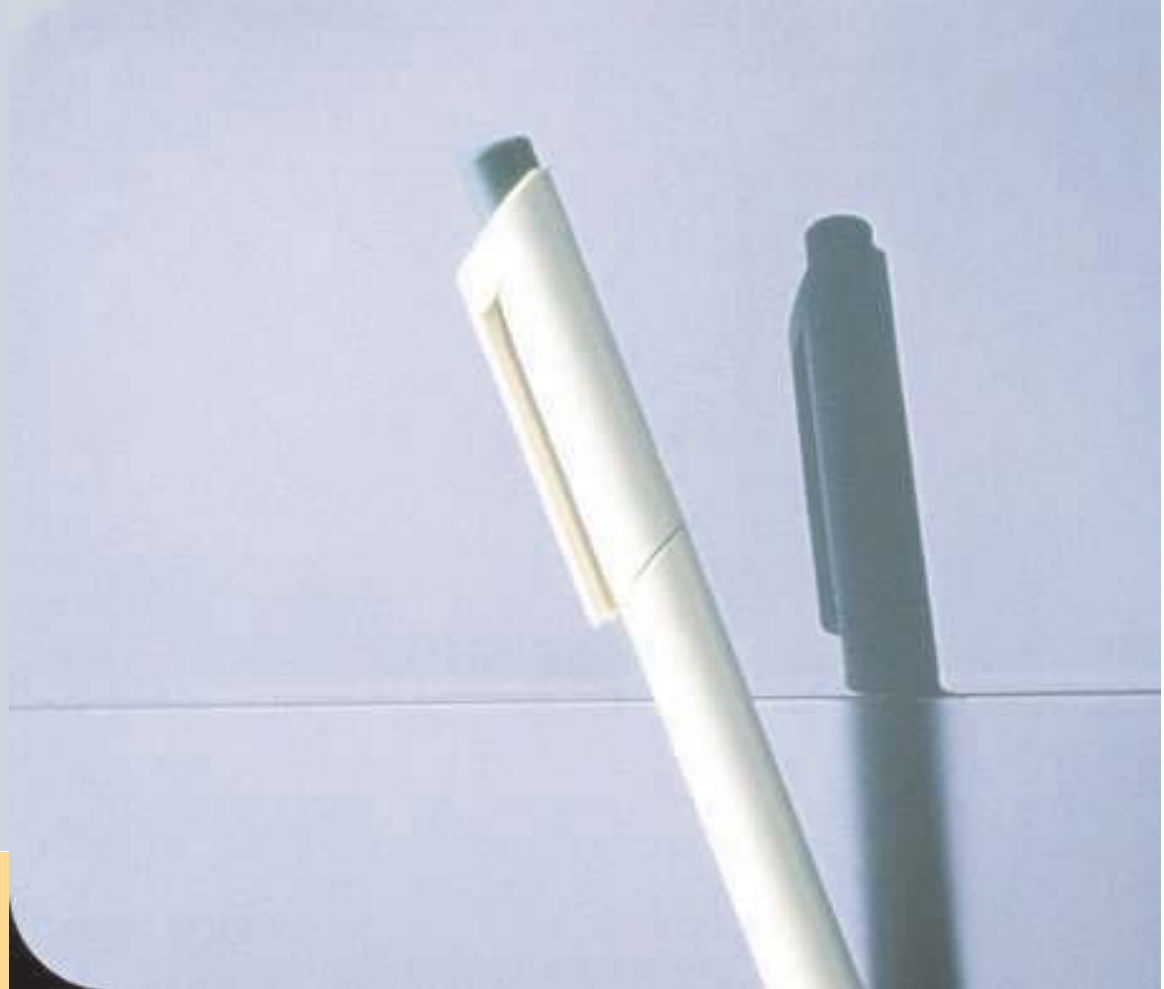
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Paint Defects Advice

Loss of Gloss/Matting

Causes

- 1) Paint swelling.
- 2) Coats too thick.
- 3) Weathering (results of the action of Sulphur dioxide/nitrous oxide combined with moisture and/or severe UV radiation).
- 4) Wrong amount of hardener in the mix.
- 5) Poor or incorrect paint-work aftercare.
 - Incorrect polishing (polish too aggressively, or in direct sunlight)
 - Weathered surfaces due to poor aftercare maintenance.
 - Car wash brushes too coarse or worn.
 - Car shampoo too strong
- 6) New repair work weathered too early. Thick coats or fresh paintwork are sensitive to condensation (below dew point).
- 7) Insufficient air circulation during spraying and/or drying operations.



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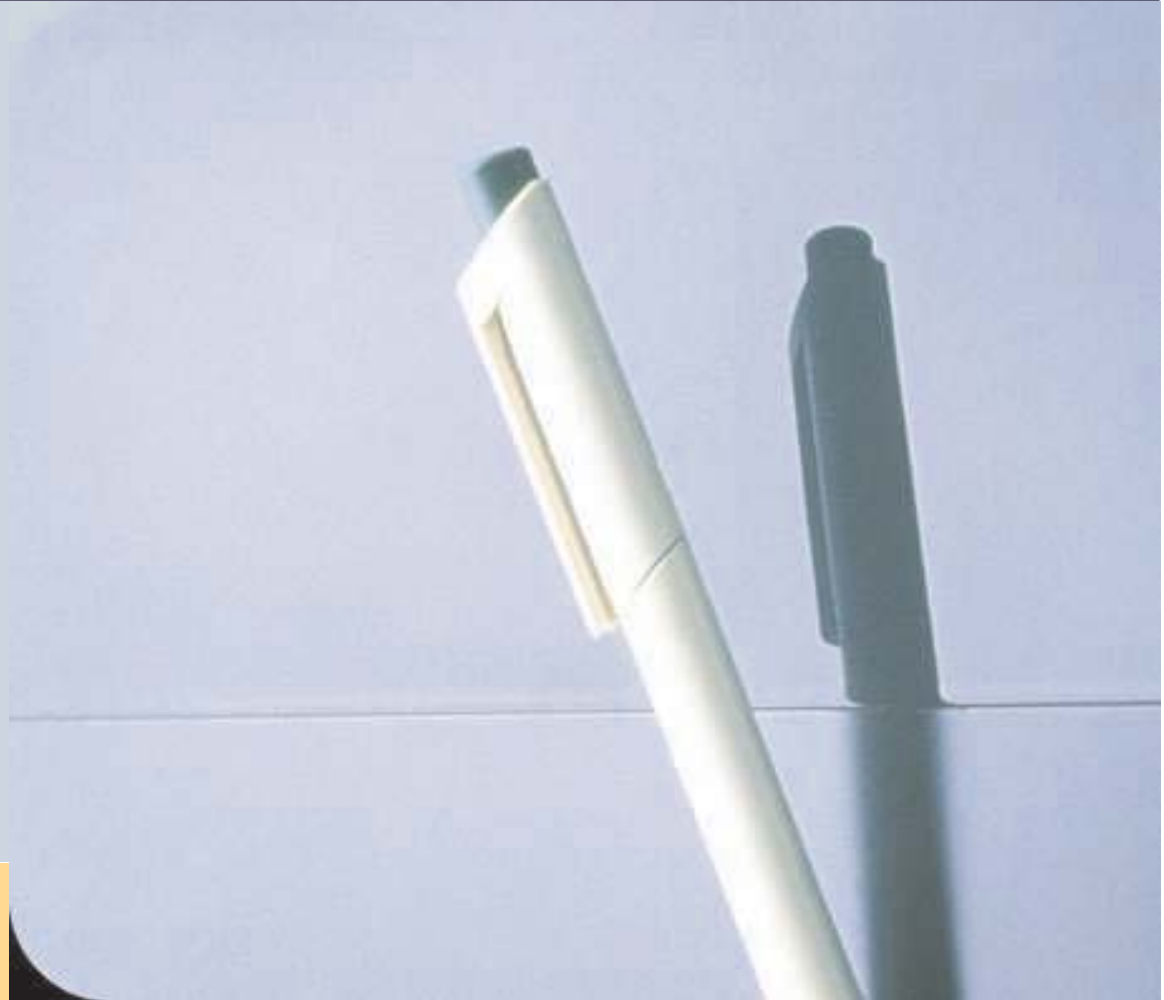
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Paint Defects Advice

Loss of Gloss/Matting

How to Prevent

- 1] See section on "Swelling".
- 2] Always keep to the film builds as recommended. With poor covering top coats (yellow and reds) use a tinting surfacer.
- 3] Ensure regular paintwork aftercare.
- 4] Always keep to the recommended mixing ratios.
- 5] See section on "Aftercare of Paintwork".
- 6] Always keep to the recommended coat thickness and drying times.
- 7] Check air circulation, replace floor and ceiling filters if necessary. If in doubt, consult you spray booth manufacturer.



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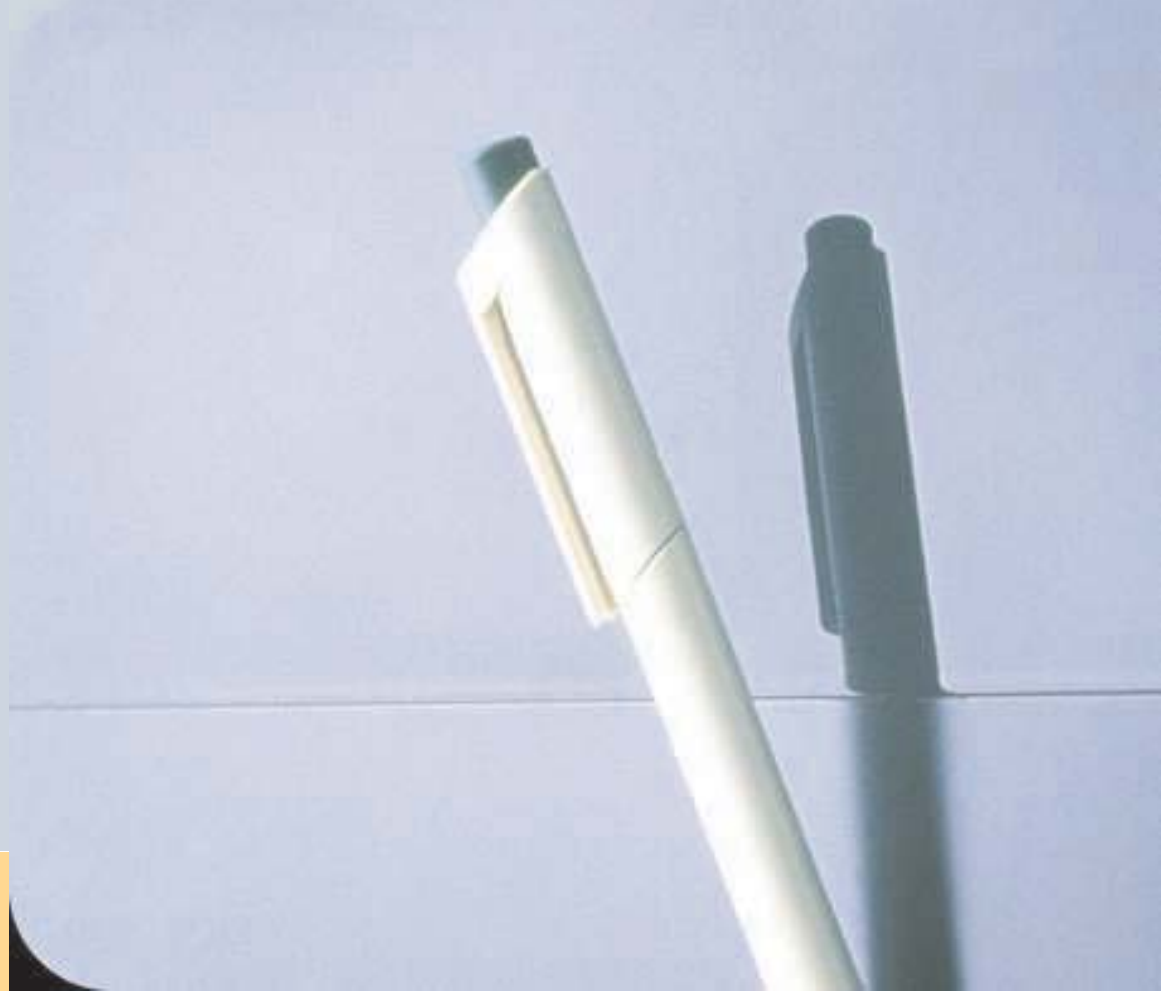
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Paint Defects Advice

Loss of Gloss/Matting

How to Repair

Try to polish out the problem with a polishing paste, and finish with a high gloss polish. If the gloss cannot be restored, then remove back to a sound substrate and refinish.



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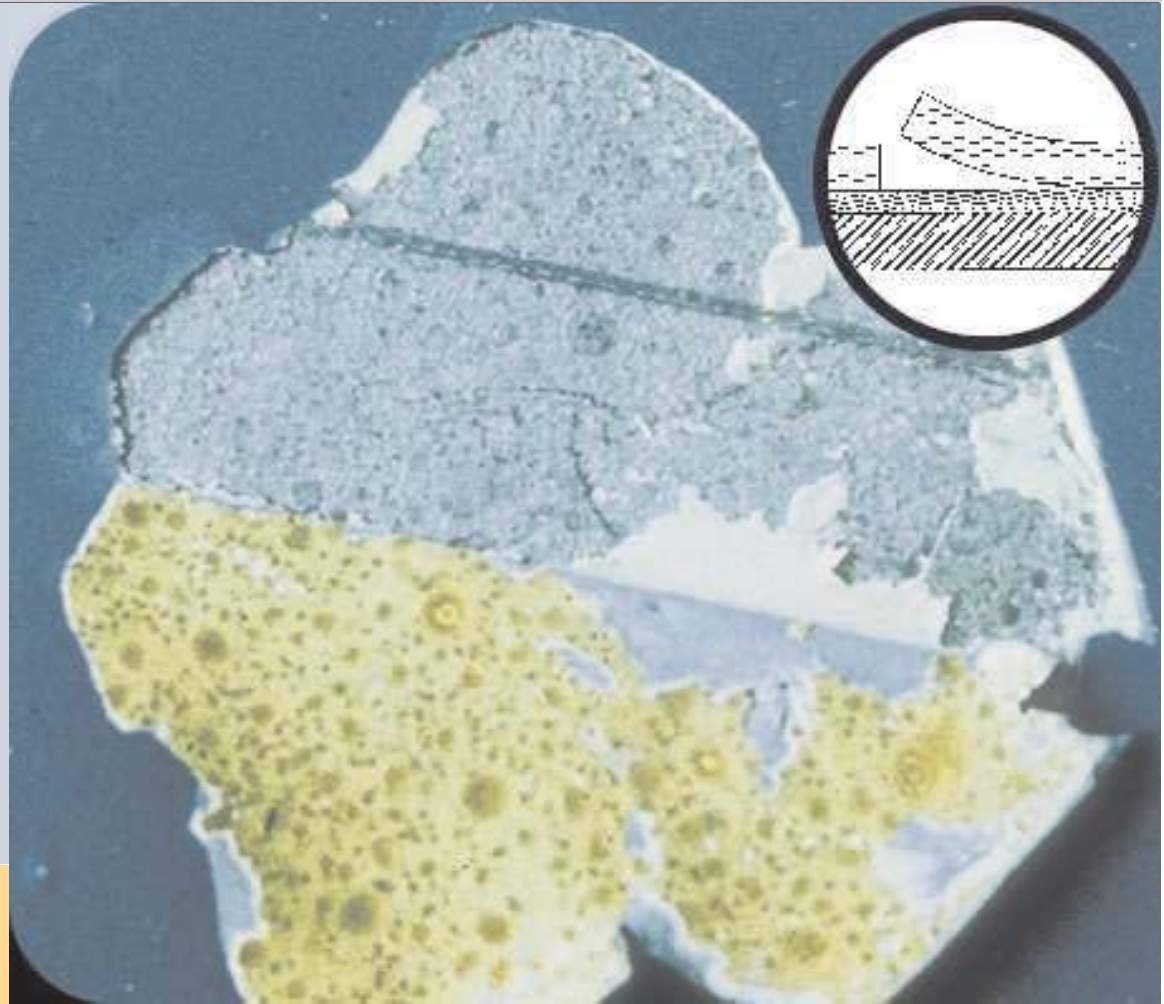
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Paint Defects Advice

Loss of Adhesion

Definition

Loss of adhesion can manifest itself in 2 different ways. First - where a total lack of adhesion occurs below the entire paint film. Second - where a lack of adhesion occurs between coats.



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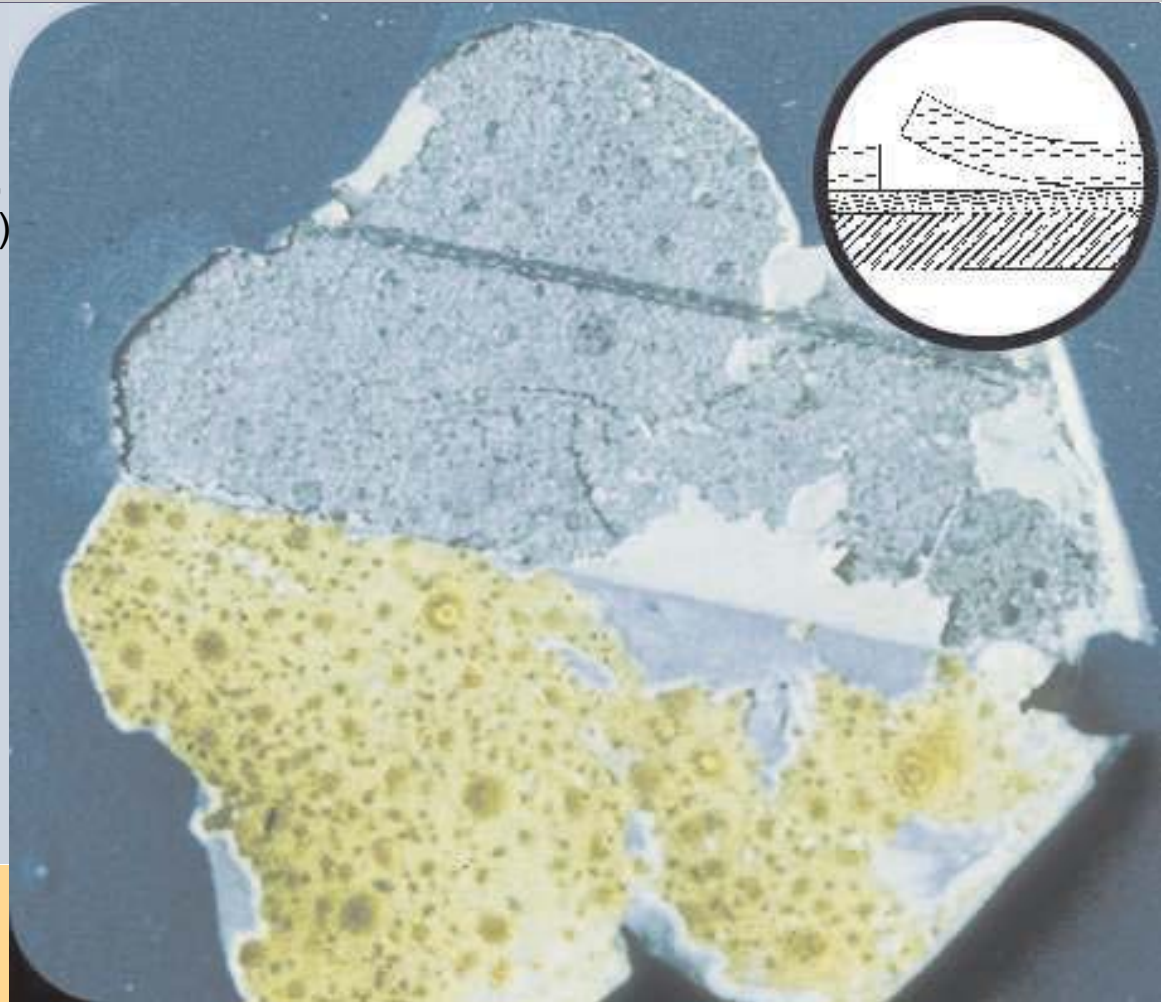
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Paint Defects Advice

Loss of Adhesion

Causes

- 1) Substances which can cause adhesion failure are left on the substrate (e.g. silicon, oil, grease, wax, rust, sanding residue, etc.)
- 2) An unsuitable primer or surfacer was applied to the substrate.
- 3) Insufficient sanding was carried out to the substrate.
- 4) Primer or base coats were applied too dry or too thin.
- 5) Poor drying conditions.



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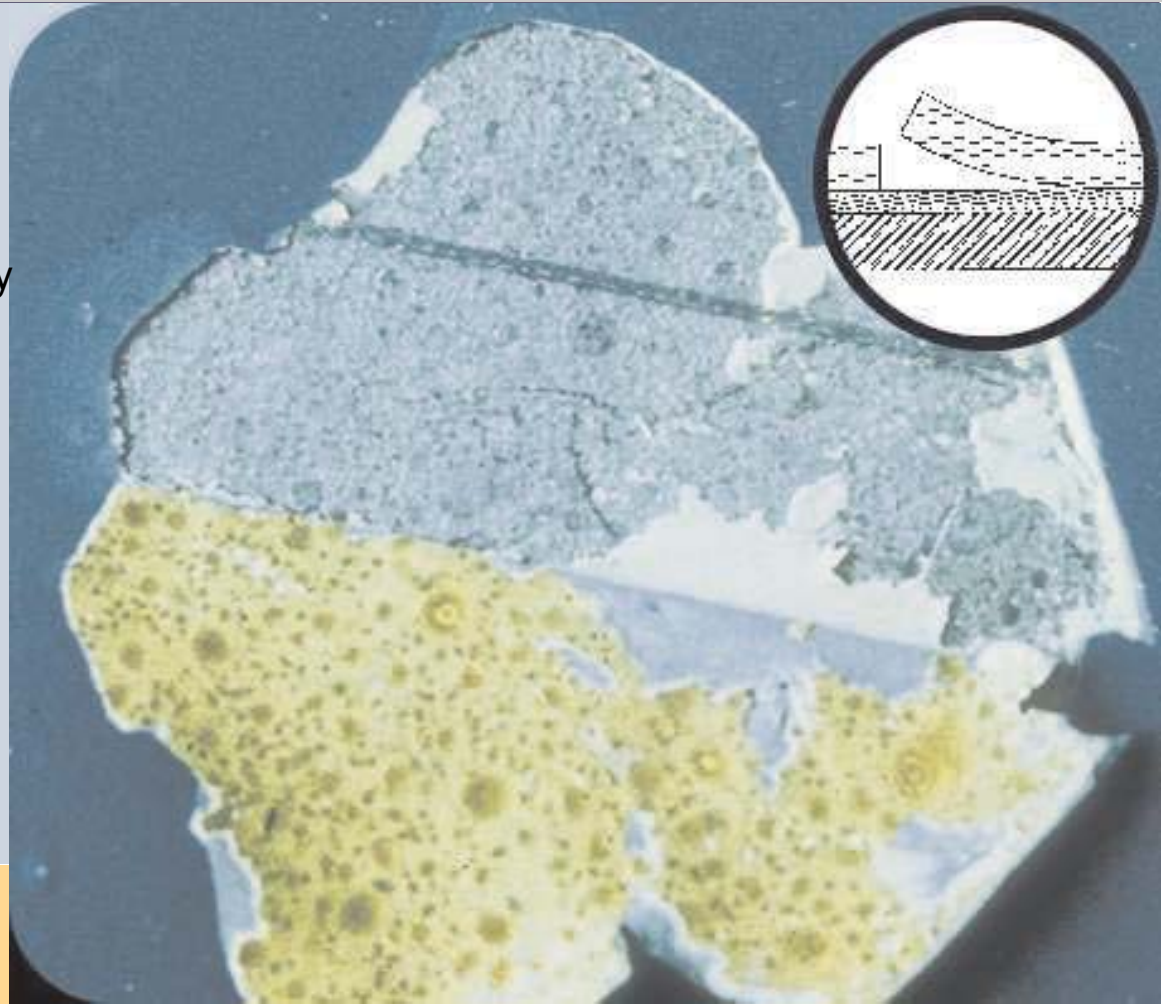
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Paint Defects Advice

Loss of Adhesion

How to Prevent

To avoid the result of loss of adhesion to the substrate, always use the correct type of primer and/or surfacer for the substrate (e.g. for aluminium, steel or plastic etc.). Only apply primers as per specification (see Technical Data Sheets or Tech Data on the cans.) Do not apply coats too thick. Thoroughly clean the substrate before application of paint materials.



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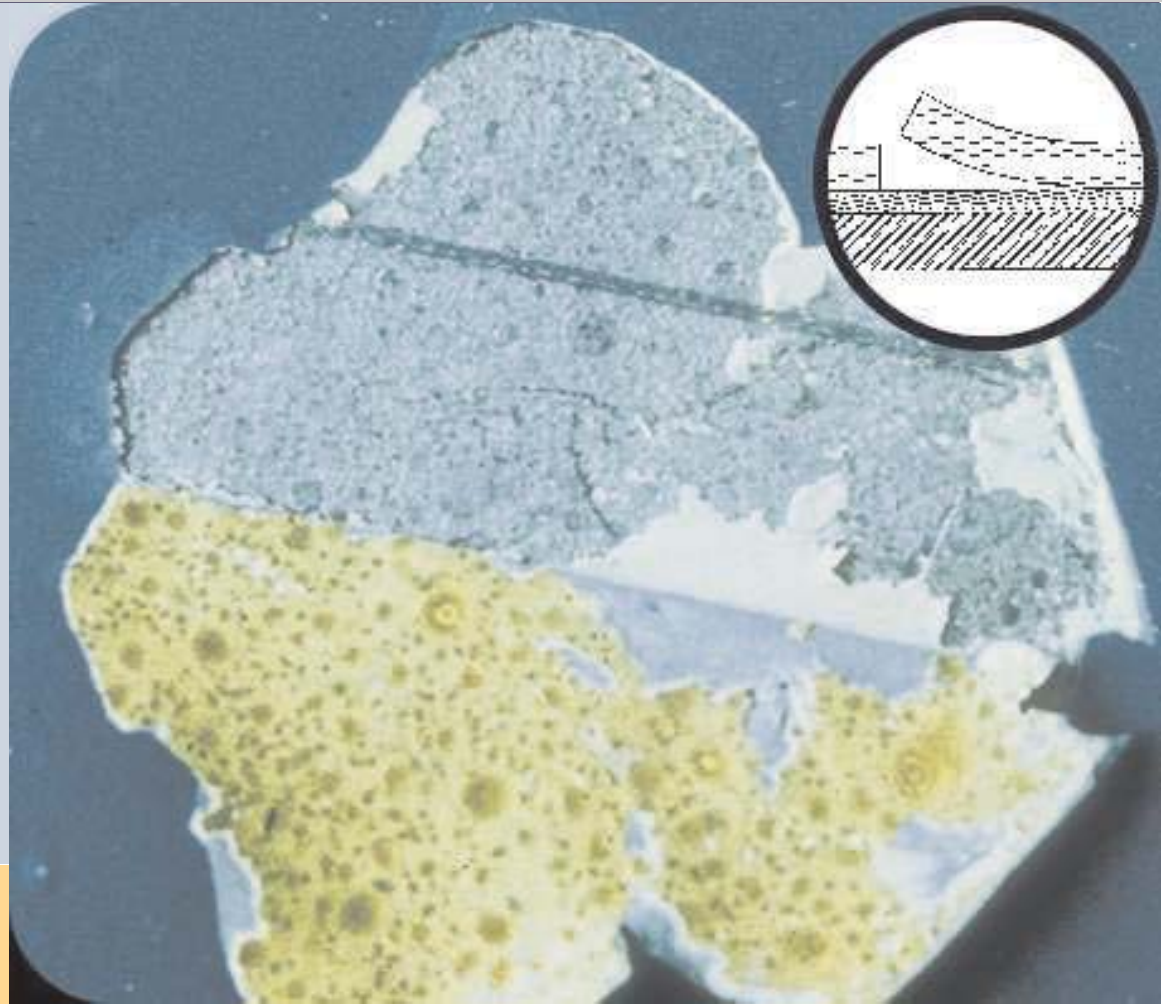
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Paint Defects Advice

Loss of Adhesion

How to Repair

Remove all coats with poor adhesion.
Thoroughly sand and clean the substrate.
Repaint using the correct choice of primer
and/or surfacer and/or top-coats.



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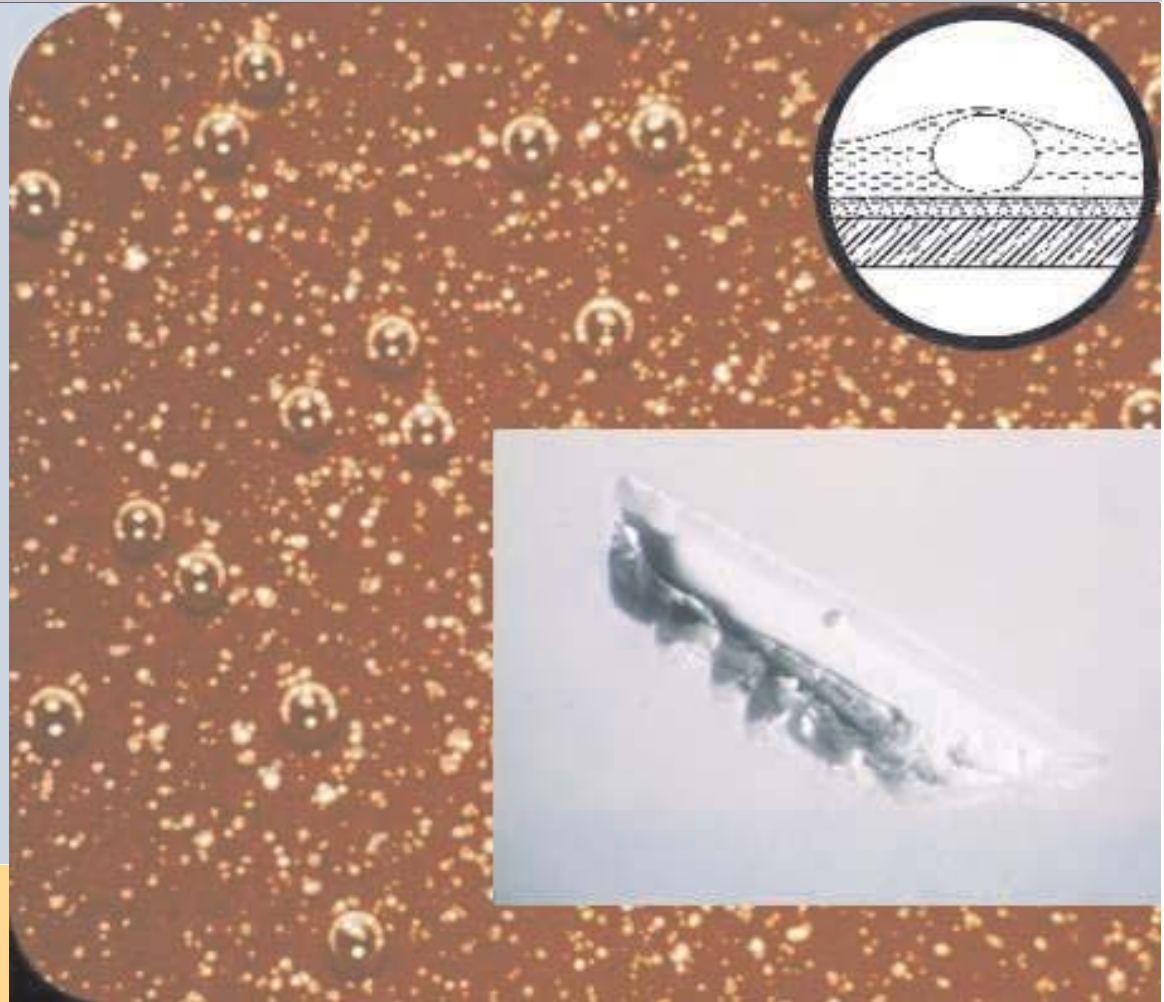
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Paint Defects Advice

Solvent Boil

Definition

Blister-like surface defects due to solvent entrapment in the surface of the paint film.



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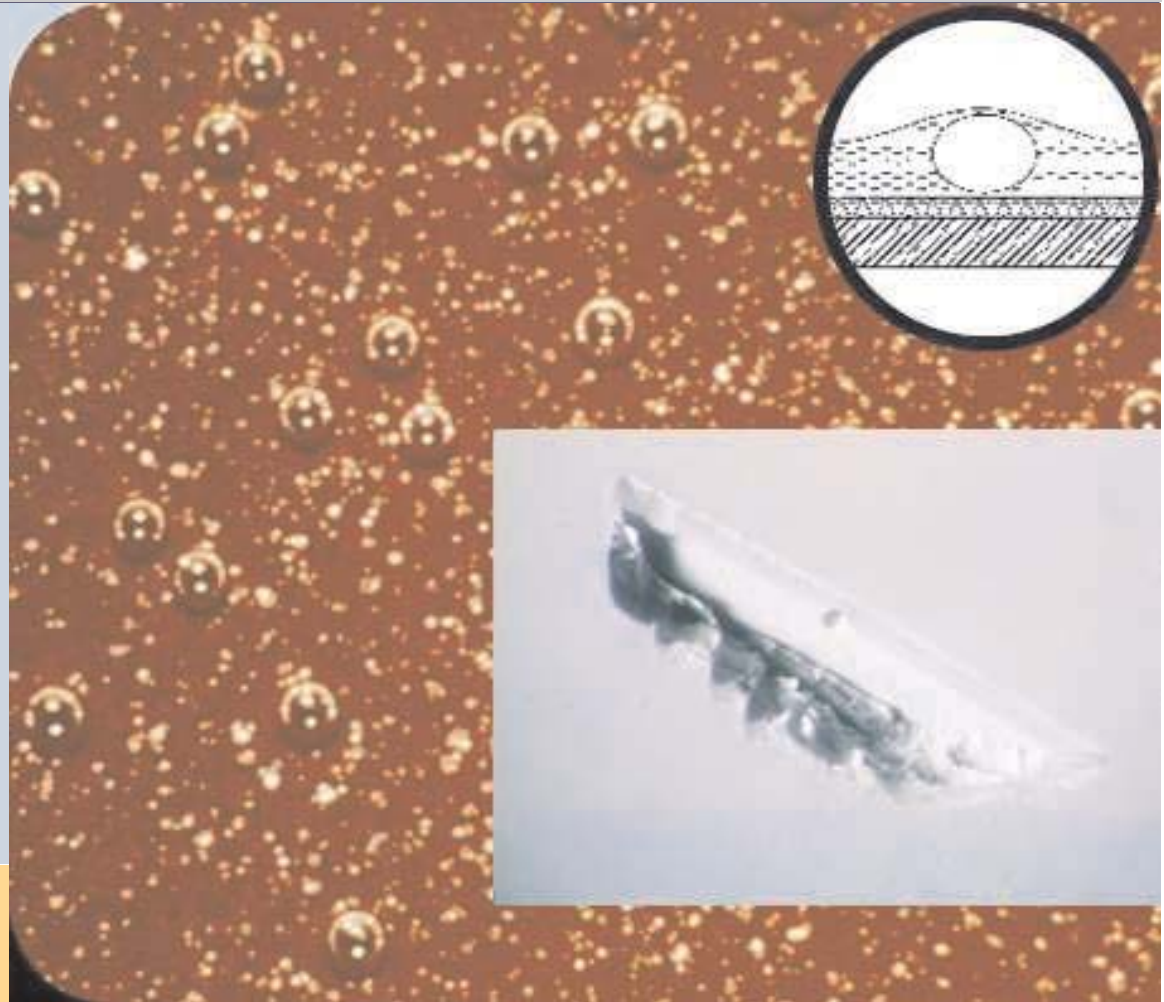
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Paint Defects Advice

Solvent Boil

Causes

- 1] Coats applied too thick.
- 2] Hardener and/or Thinner too fast.
- 3] Flash-off time between individual paint coats too short.
- 4] Flash-off time before baking or Infra-red drying too long.
- 5] Insufficient distance between IR lamps and object causing too high a temperature.
- 6] When using a wet-on-wet system, too short a flash off between coats.



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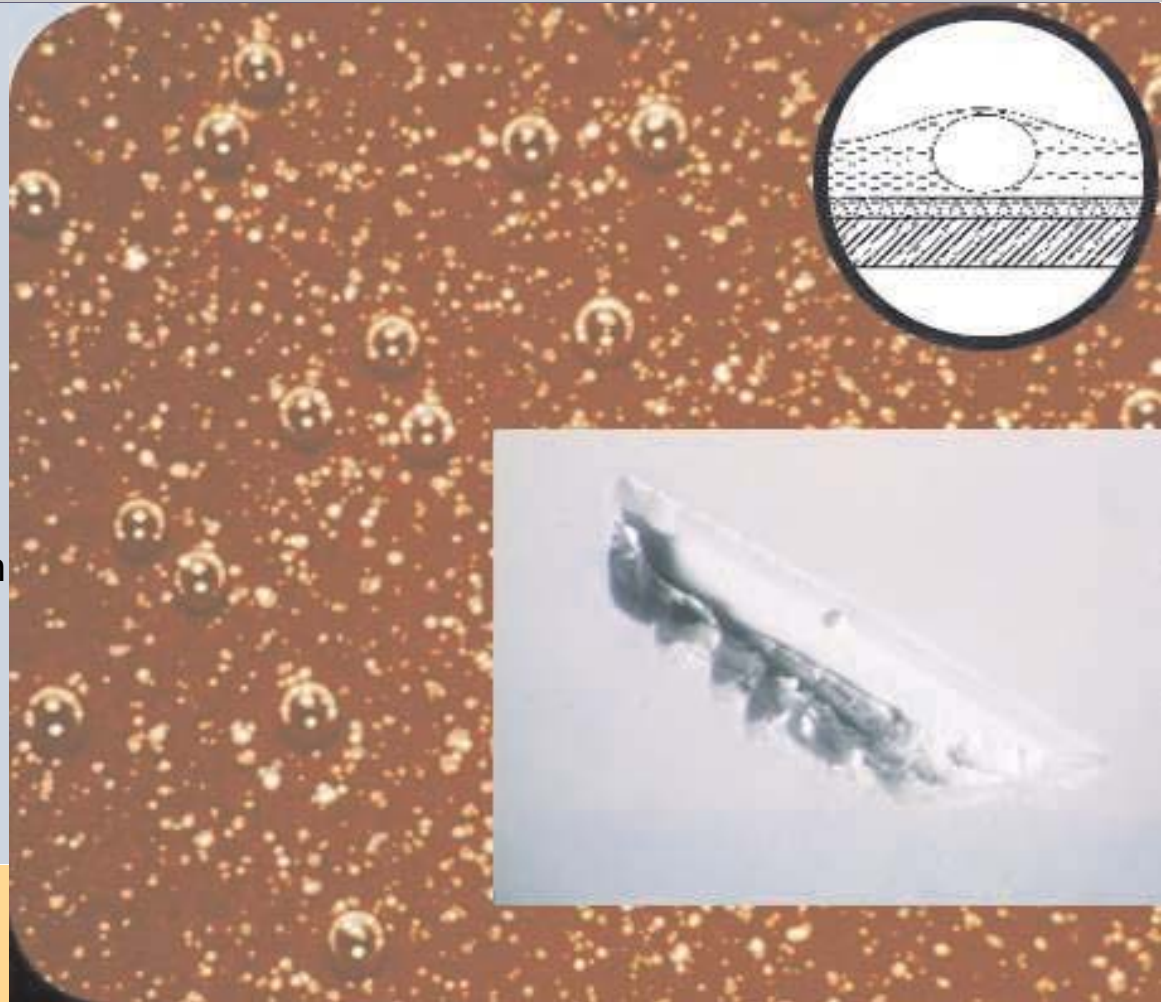
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Paint Defects Advice

Solvent Boil

How to Prevent

- 1] Keep to recommended film builds.
- 2] Use correct choice of hardener and thinner for the working temperature available (see temperature table).
- 3] Keep to recommended flash-off times.
- 4] When using certain products, no flash-off time is required before baking.
- 5] Keep to recommended distances and intensities when drying with Infra-red.
- 6] Keep to recommended film builds and flash off times between coats.



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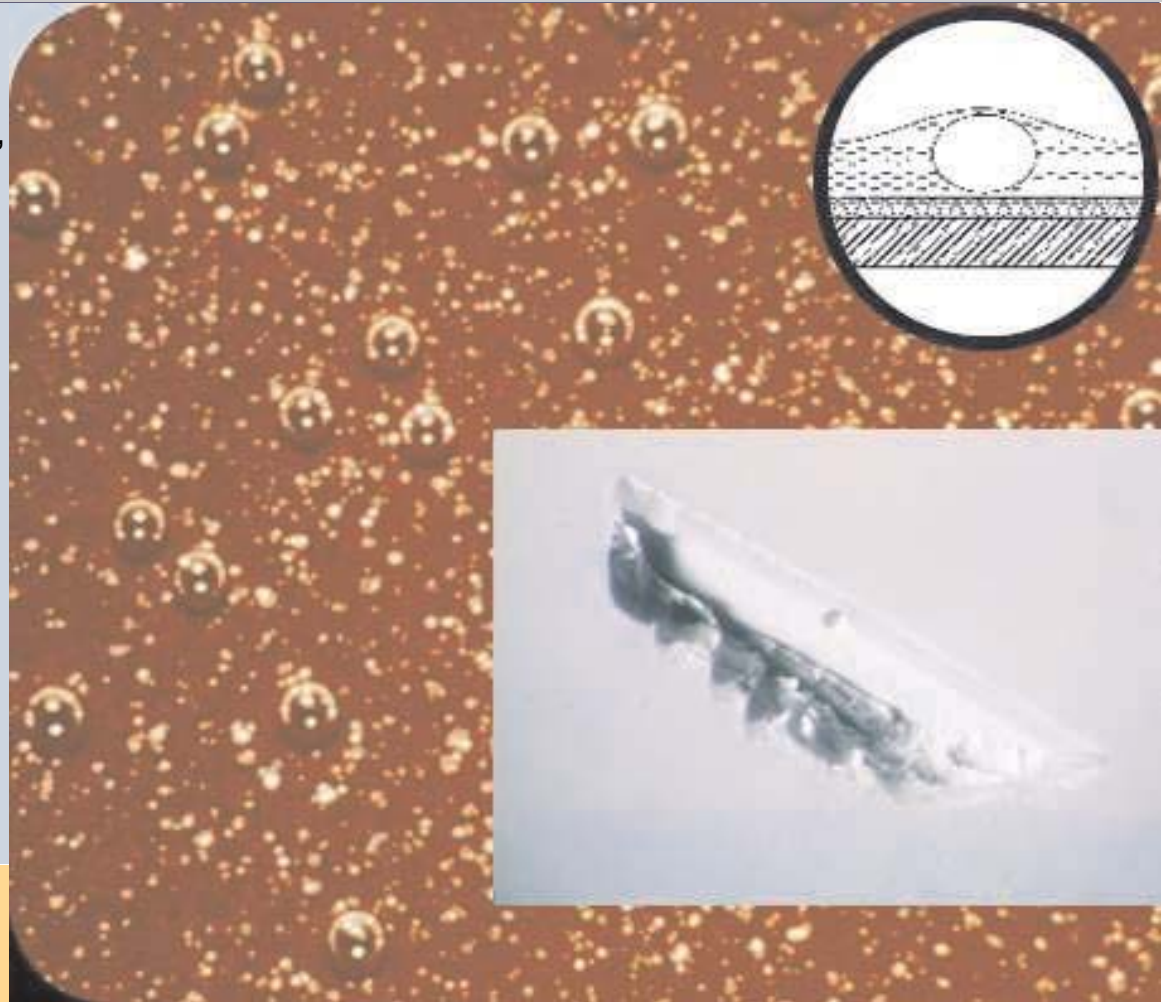
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Paint Defects Advice

Solvent Boil

How to Repair

For surface defects caused by solvent boiling, the paint coats must be sanded back to a sound substrate. Refinish using the correct choice of primers and top-coats. If the bubbles are not completely removed, pinholes will appear when the next coats are applied (see chapter on "Pinholes").



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Paint Defects Advice

Pinhole Marks

Definition

Small holes or craters in the new paintwork as a result of solvent boil not removed properly from the substrate (old finish).



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Paint Defects Advice

Pinhole Marks

Causes

- 1) Solvent Boil or aeration of the old paint finish.



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Paint Defects Advice

Pinhole Marks

How to Prevent

- 1) Either sand out the holes/craters completely or, where possible, fill the holes.



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Paint Defects Advice

Pinhole Marks

How to Repair

Pinholes or small craters can only be repaired successfully by thorough sanding of the substrate or by filling the areas if practical or desirable.



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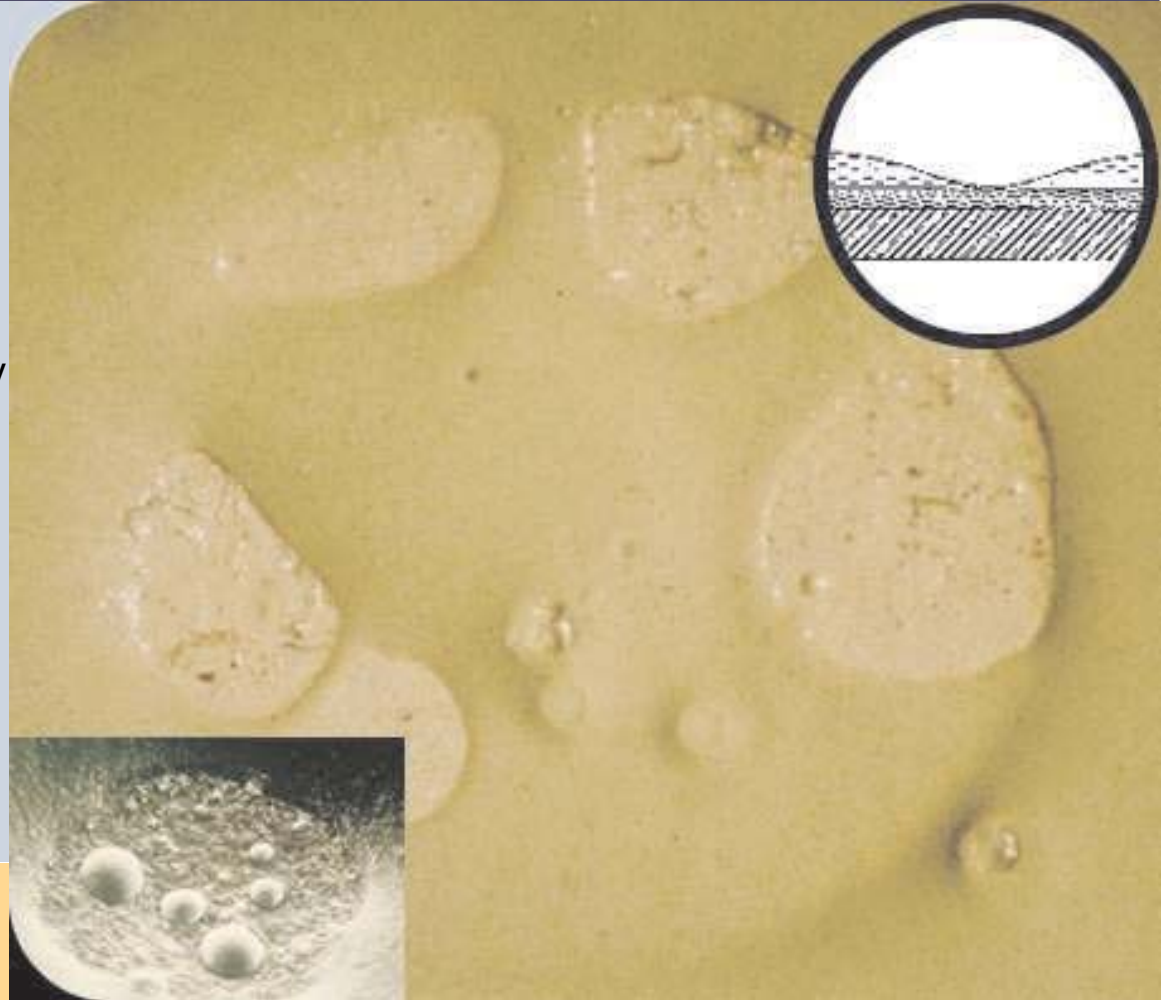
Paint Defects Advice

Cratering

Definition

Circular recesses with a diameter from 0,5 to 3 mm. The problem may range in appearance from a very flat recess in the top-coat to a deep fault which extends back to the substrate.

If incorrectly repaired, the original craters may reappear as a more flat recess



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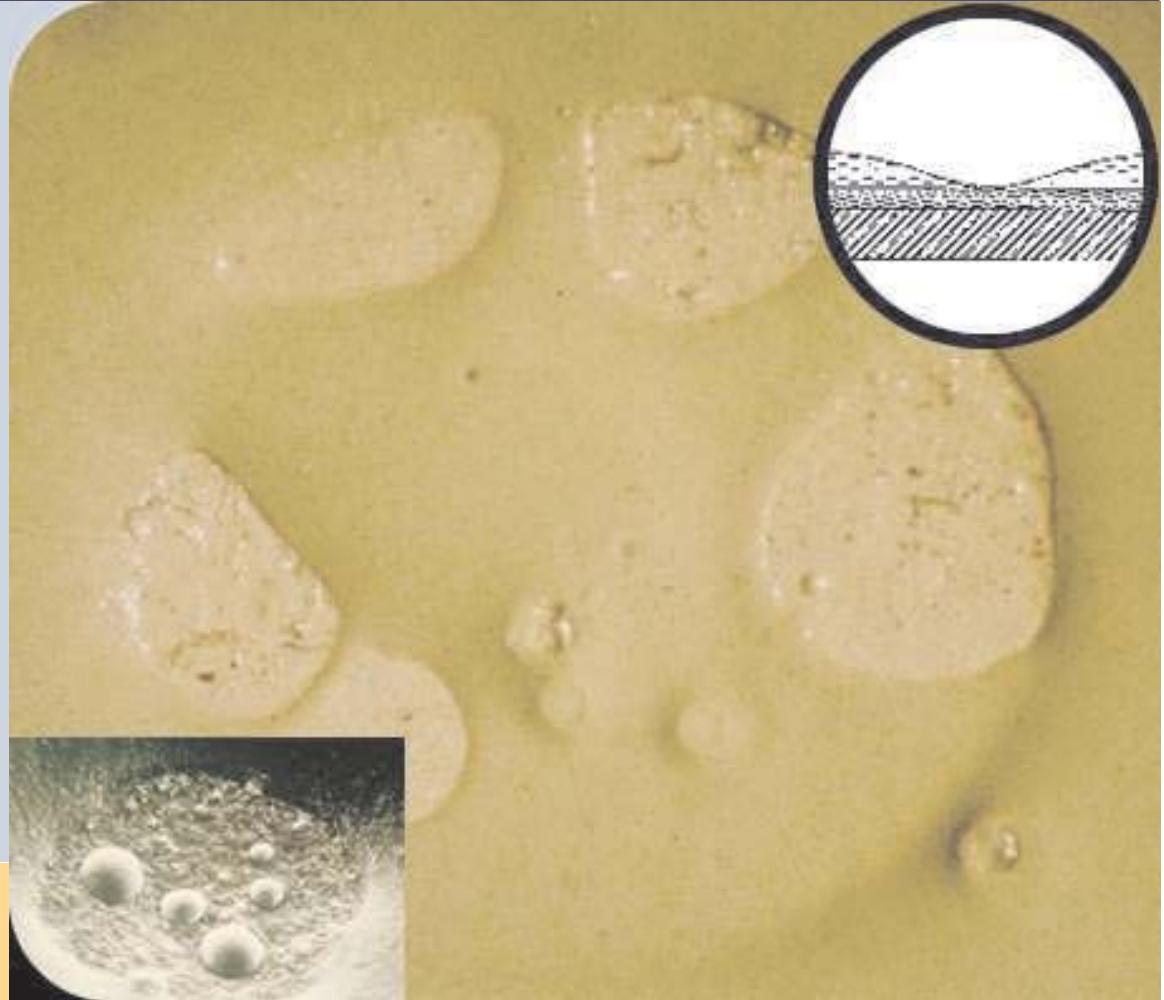
Paint Defects Advice

Cratering

Causes

Mainly: Oil, grease, wax and silicon residue. (e.g. polishes containing silicon):

- 1) Marks from clothing, rubber gloves, skin and hair lotions.
- 2) Lubricants from moving parts, release agents from plastic parts, hoses and sealants, inadequate oil and water trap bleeding, dirty ceiling and floor filters
- 3) Incorrect use of paint additives (Anti-silicon additive), unsuitable thinner/hardener impurities from poor transportation or storage.
- 4) Residues from release agents (on plastic parts) slip additives, solder flux, bitumen and oil from insulating mats.
- 5) Release agents from new sponges, unsuitable cleaning agents or abrasives, adhesives from tapes.
- 6) Intake of polluted air from other work areas (polishes, oil sprays, release agents, fine dusts etc) sealant and insulation dusts from the building.



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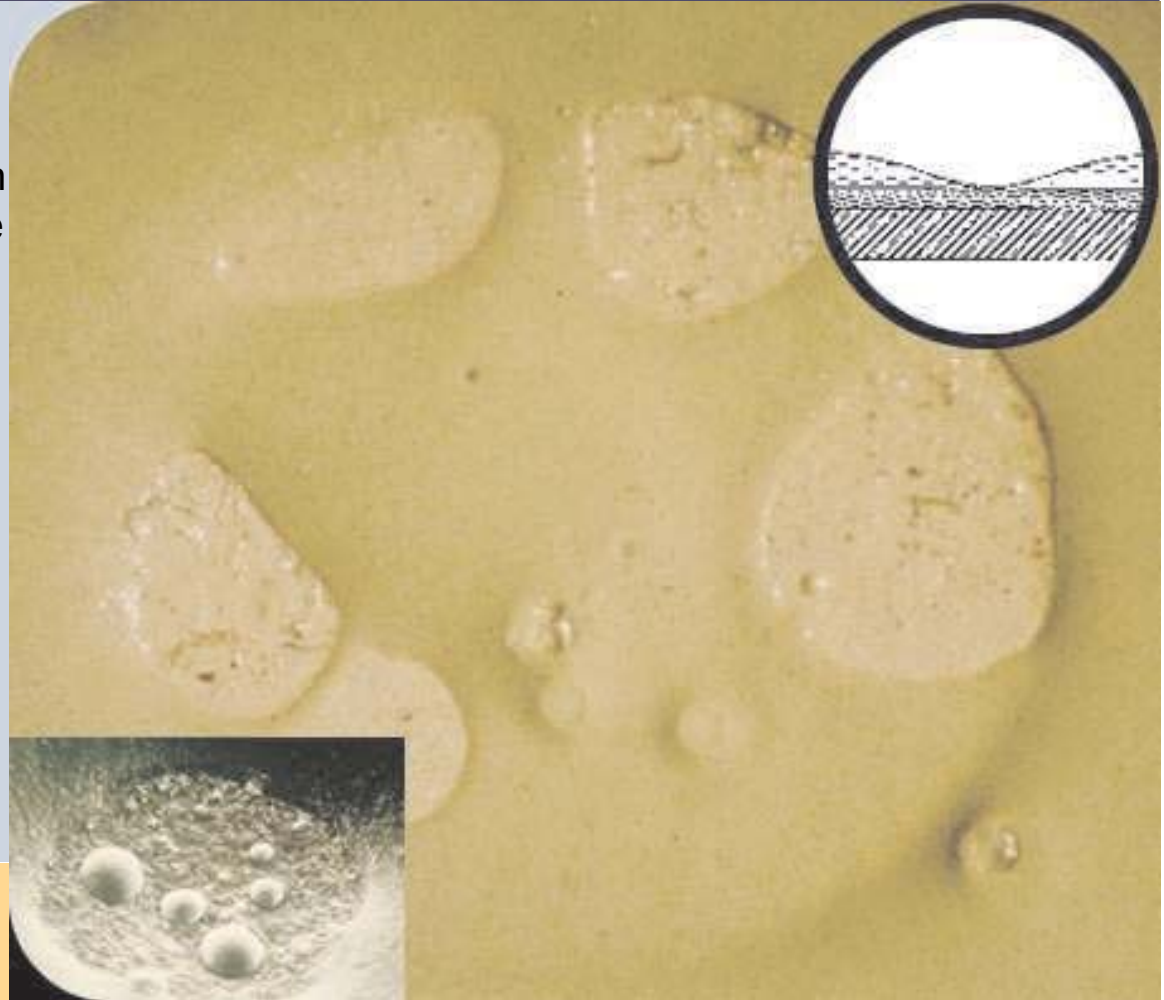
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Paint Defects Advice

Cratering

How to Prevent

Points 1 to 6 under "Causes" give the reasons for many of the causes of cratering in paint finishes, from which it is possible to take precautions to avoid the the contamination. In principle, we would recommend that only silicon-free products are used in the vicinity of the paintshop, and substrates are always cleaned thoroughly.



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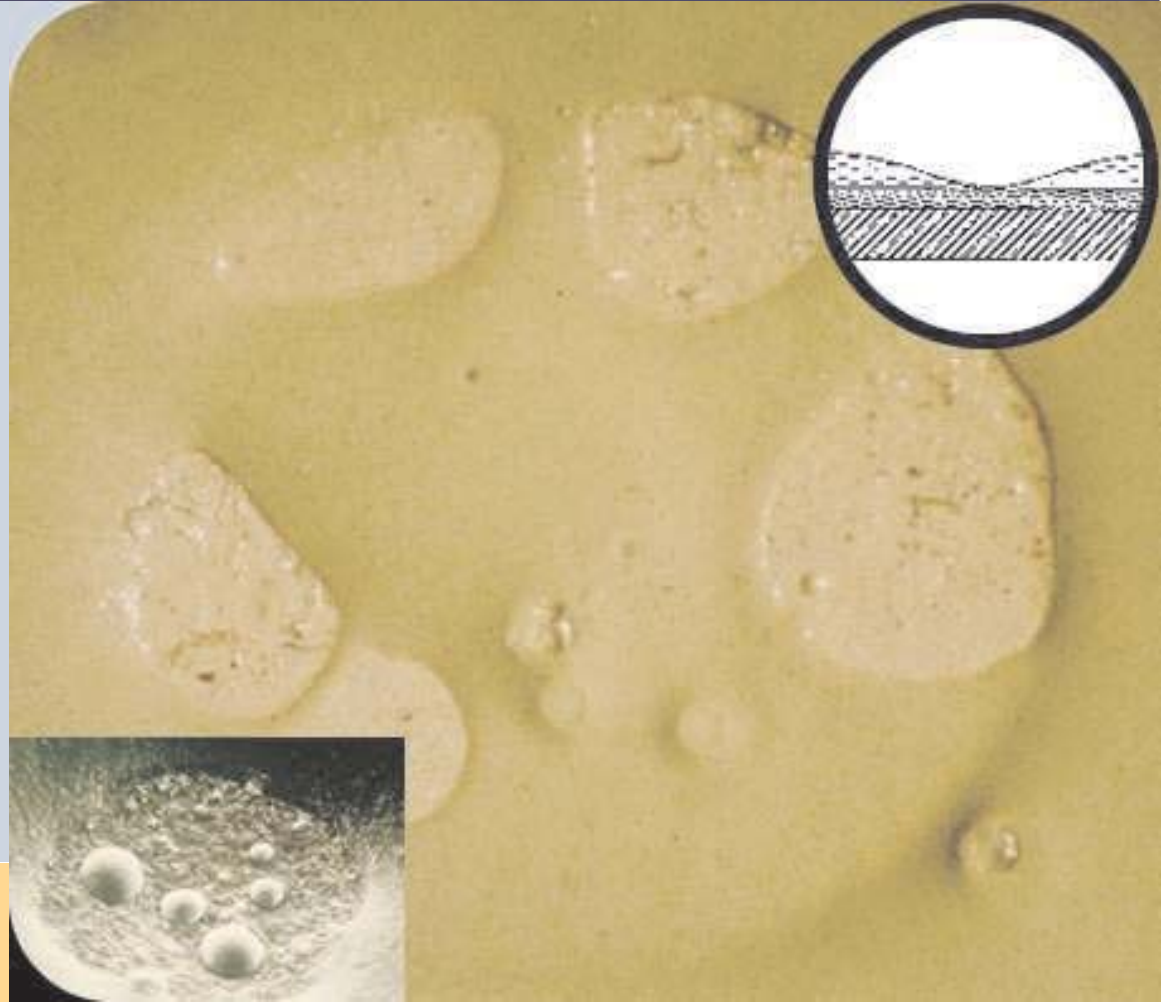
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Paint Defects Advice

Cratering

How to Repair

Thoroughly sand the paint build back to a sound substrate. Repaint using the correct choice of primers and top-coats. If it is necessary to repaint over a paint layer where silicon induced craters are clearly present, we recommend the use of an anti-silicon additive to be applied.



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Paint Defects Advice

Scratches from Car Wash

Definition

Thread-like scratches which are often in parallel lines, and are particularly visible on darker colours. The surface can lose gloss and appear grey in shade



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Paint Defects Advice

Scratches from Car Wash

Causes

- 1] Hand wash brush or car wash brushes which are too coarse, too dirty or very worn.
- 2] Pre-wash too dry with insufficient water.
- 3] Exposing fresh new paintwork to a car wash too early. The sensitivity to marking of a new paint surface is increased when the paint is not dried for long enough or when too thick a coat is applied or the incorrect hardener is used.



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Paint Defects Advice

Scratches from Car Wash

How to Prevent

- 1] Use the correct clean brushes.
- 2] Thoroughly wet the car before brushing with plenty of water.
- 3] Avoid washing the car too quick after new paintwork. Always keep to the recommended film thickness, drying times and mixing ratios with hardener



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Paint Defects Advice

Scratches from Car Wash

How to Repair

Polish out the problem with a fine polishing paste and finish with a high gloss polish.

Damage caused by car wash brushes cannot easily be prevented. Some cars are initially supplied with a scratch resistant clear-coat as standard. These cars may be repaired with a scratch resistant clear, which could also be used on other vehicles.



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Paint Defects Advice

Chalking

Definition

Decomposition of the binding agents at the paint surface resulting in the release of the colour pigments. Reds and yellow colours turn whitish and dark blues turn bronze.



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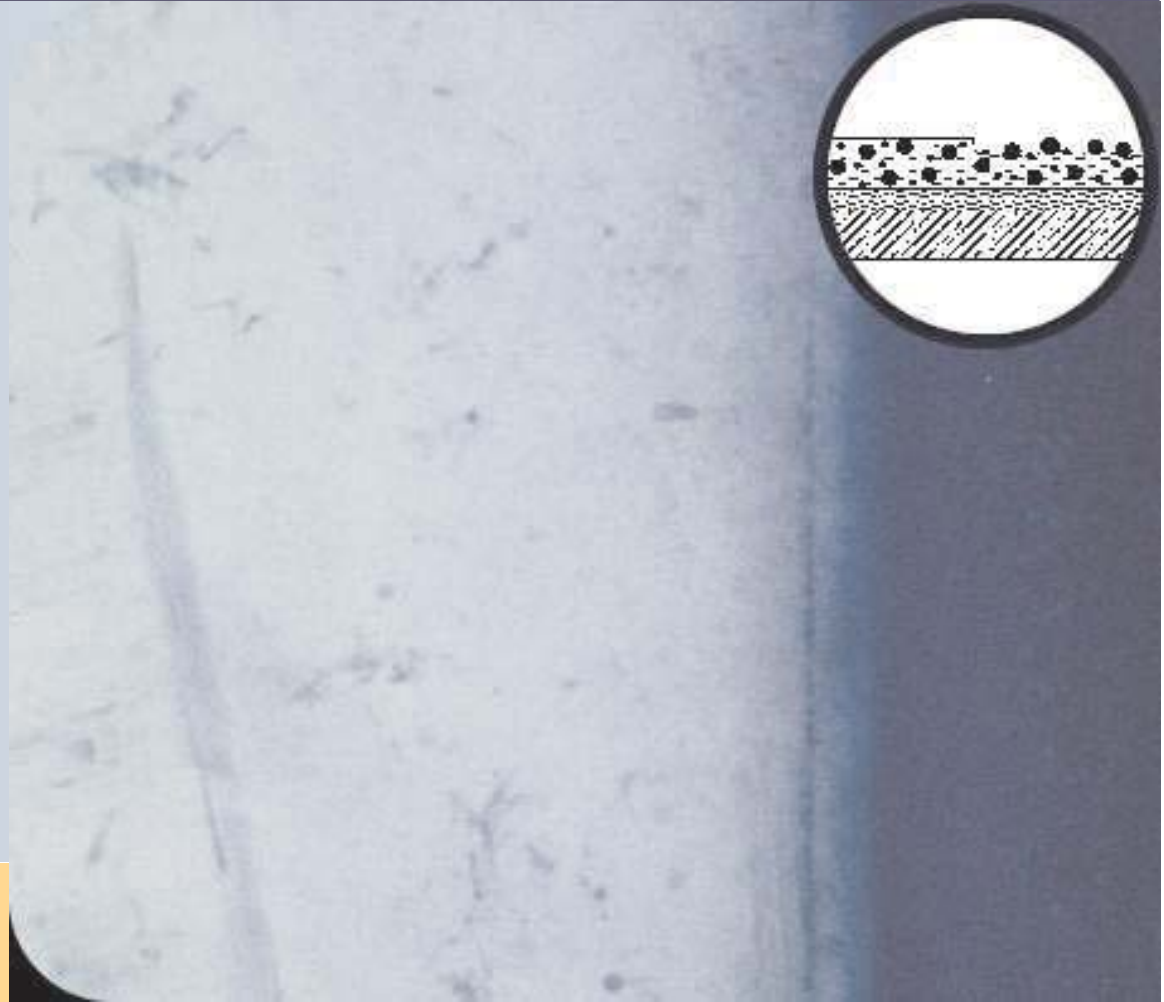
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Paint Defects Advice

Chalking

Causes

- 1] Choice of wrong hardener or amount.
- 2] Colour coats applied too thick.
- 3] Weathering (aggressive environmental pollution such as sulphur dioxide and nitrous oxides in combination with high humidity and exposure to UV radiation).
- 4] Poor after-care of the paintwork.
- 5] Poor repair to a previously chalking paint finish.



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Paint Defects Advice

Chalking

How to Prevent

- 1] Always use recommended hardener and mixing ratio.
- 2] Always keep to the recommended film thickness and number of coats. For colours with poor covering power (yellow's reds etc), use a coloured surfacer (as used by OEM Automotive Industry).
- 3]+4] Regular paintwork maintenance.
- 5] Ensure chalked paintwork is removed back to a sound substrate before refinishing. Use base coat + clear lacquer system where possible.



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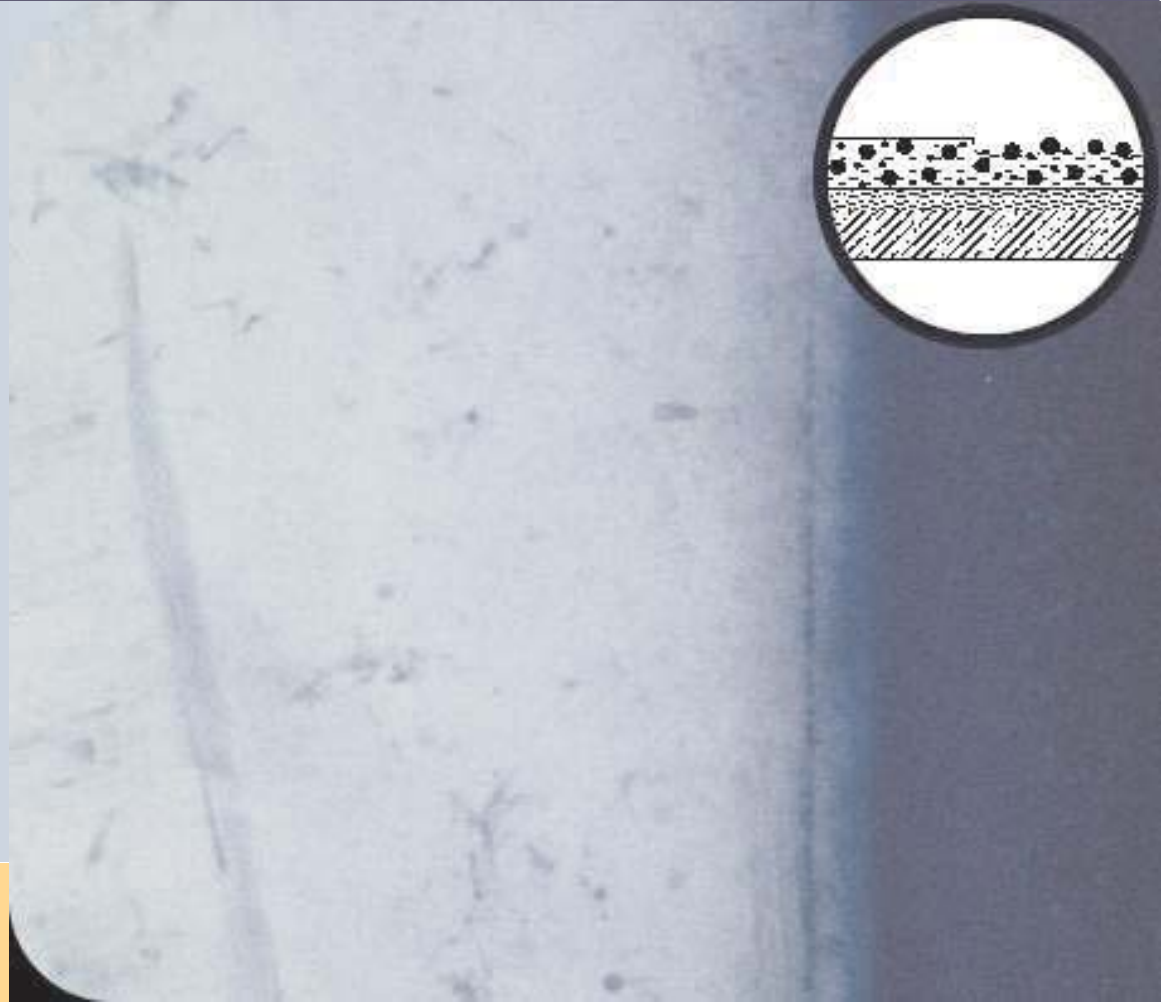
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Paint Defects Advice

Chalking

How to Repair

Try to polish out the problem using a fine polishing paste and finish with a high gloss polish. If the chalked surfaces do not respond to this action, or if the problem returns within a short period (a few weeks), then the damaged paintwork must be removed back to a sound substrate and refinished.



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Paint Defects Advice

Faults in Painting Plastics - Flaking

Definition

Easy removal of the total film build from the plastic substrate.

The most common faults in painting plastics are: flaking of the entire paint build from the plastic substrate; crazing; pinhole marking.



flaking

cracking

pinhole

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Paint Defects Advice

Faults in Painting Plastics - Flaking

Causes

- 1) Insufficient cleaning of the plastic substrate.
- 2) Insufficient sanding of the plastic substrate.
- 3) Unsuitable cleaner or degreaser used, or wrongly used
- 4) Plastic part not tempered before painting.
- 5) No plastic primer/adhesion-promoter used.



flaking

cracking

pinhole

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Paint Defects Advice

Faults in Painting Plastics - Flaking

How to Prevent

- 1] Wash the part thoroughly with a mild detergent solution to remove any water soluble release agents. Thoroughly clean the plastic with appropriate cleaner to remove solvent soluble release agents. Where plastic is very dirty or textured, clean with the assistance of a sanding pad. Clean the surface before and after sanding.
- 2] Use recommended sanding grades. Where an irregular shaped part is to be sanded (e.g. radiator grill, bumper etc.) use a sanding pad.
- 3] Re-clean with appropriate cleaner.
- 4] "Tempering" means sweating out the release agents by heating (1-2 hours at a maximum)
- 5] Use appropriate plastic primer .

flaking

cracking

pinhole



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Paint Defects Advice

Faults in Painting Plastics - Flaking

How to Repair

Remove the flaking paintwork completely and refinish. Do not use a normal paint stripper or the plastic could be damaged or destroyed.



flaking

cracking

pinhole

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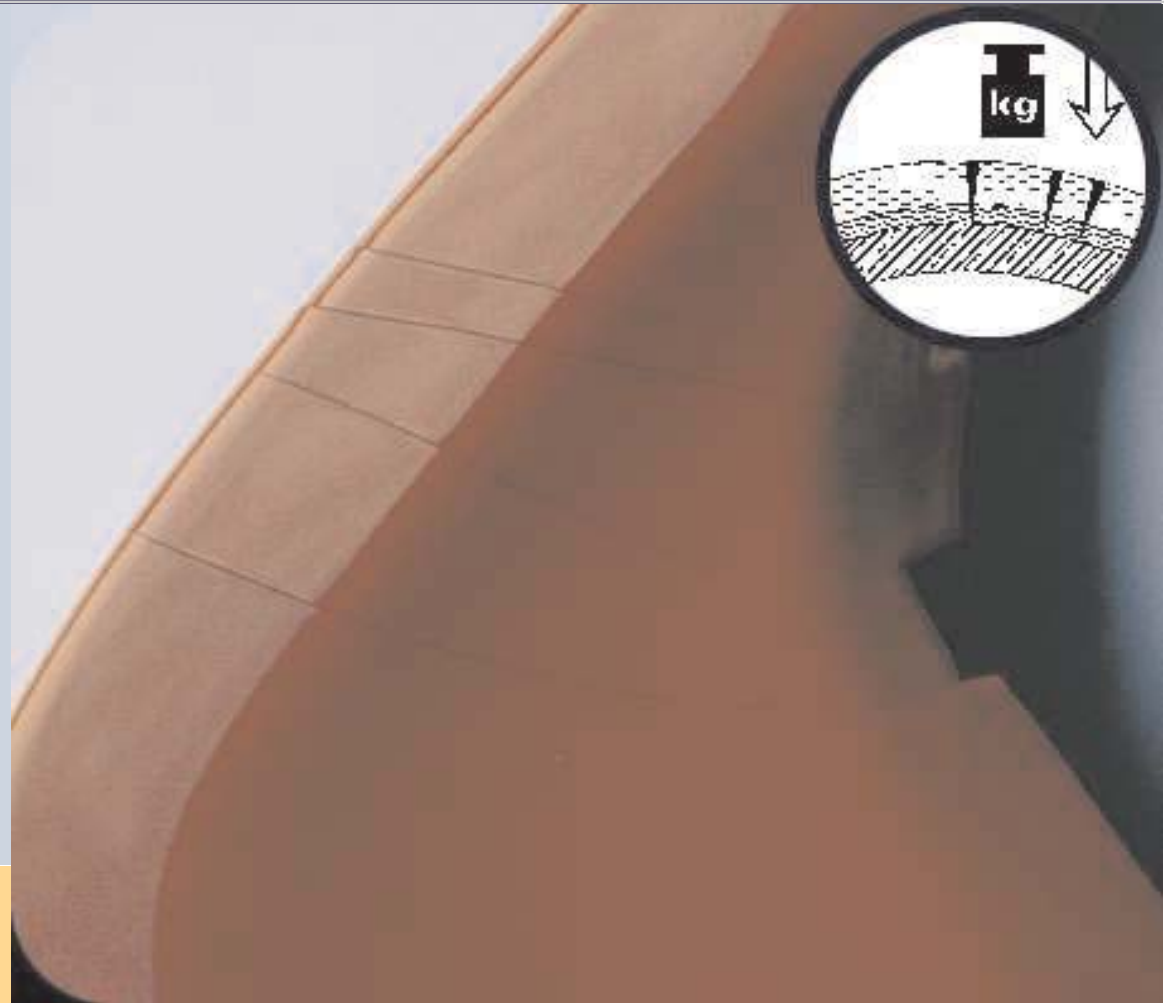
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Paint Defects Advice

Faults in Painting Plastics - Cracking

Definition

Break or crack lines in the paint finish after mechanical stress. In severe cases the plastic may also crack. This problem is normally associated with soft flexible parts (e.g. PUR real spoilers).



flaking

cracking

pinhole

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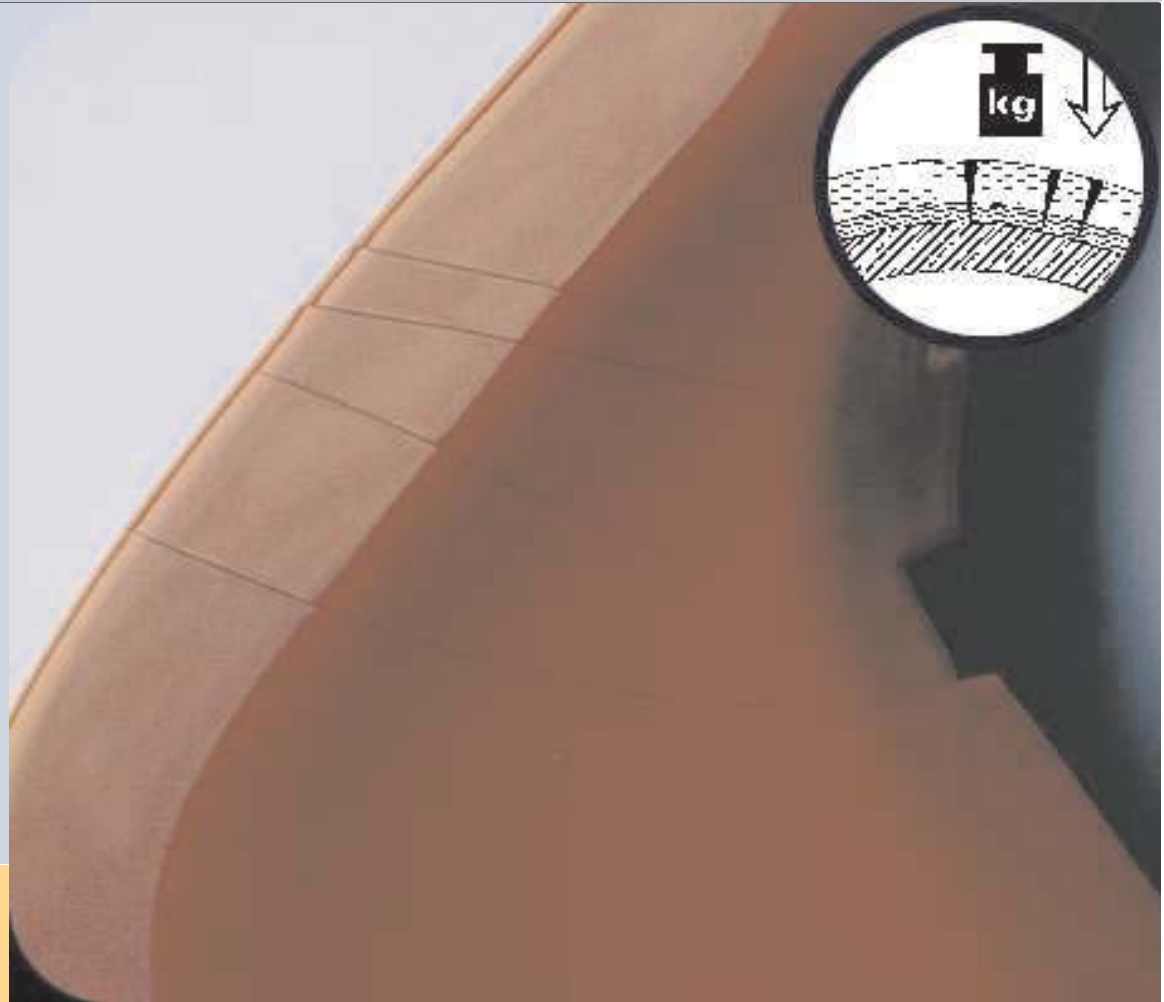
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Paint Defects Advice

Faults in Painting Plastics - Cracking

Causes

- 1) Insufficient or failure to use a flexible additive to the paint.
- 2) Total paint thickness far too high.



flaking

cracking

pinhole

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Paint Defects Advice

Faults in Painting Plastics - Cracking

How to Prevent

1] The amount of flexible additive added to the paint depends on the degree of flexibility required and whether the plastic is rigid (hard) or soft (flexible). Soft (spongy plastics are usually PUR Foam (e.g. rear spoilers) and can be easily indented with the thumb. All other plastics are rigid (hard). In principle, the filler, solid top coat or clear lacquer coats must be plasticised. Base-coats in a two coat system do not require softface additive.

Hard/Rigid Plastics: Mix the paint 4:1 by volume with additive before adding hardener.

Soft/Flexible Plastics: Mix the paint 2:1 by volume with additive before adding hardener.

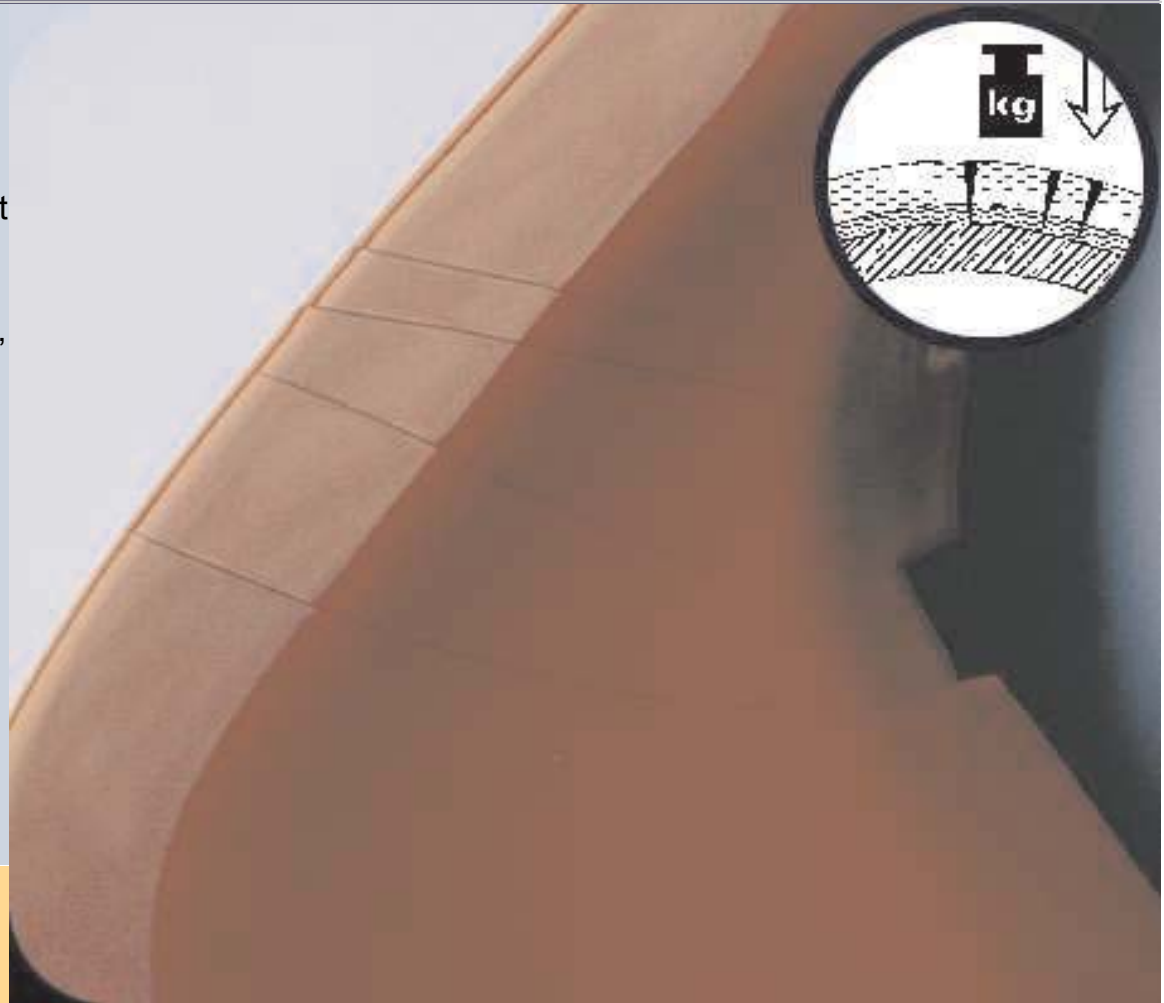
Note: First add the additive and then add hardener in the recommended mixing ratio.

2] Keep to the recommended film thickness.

flaking

cracking

pinhole



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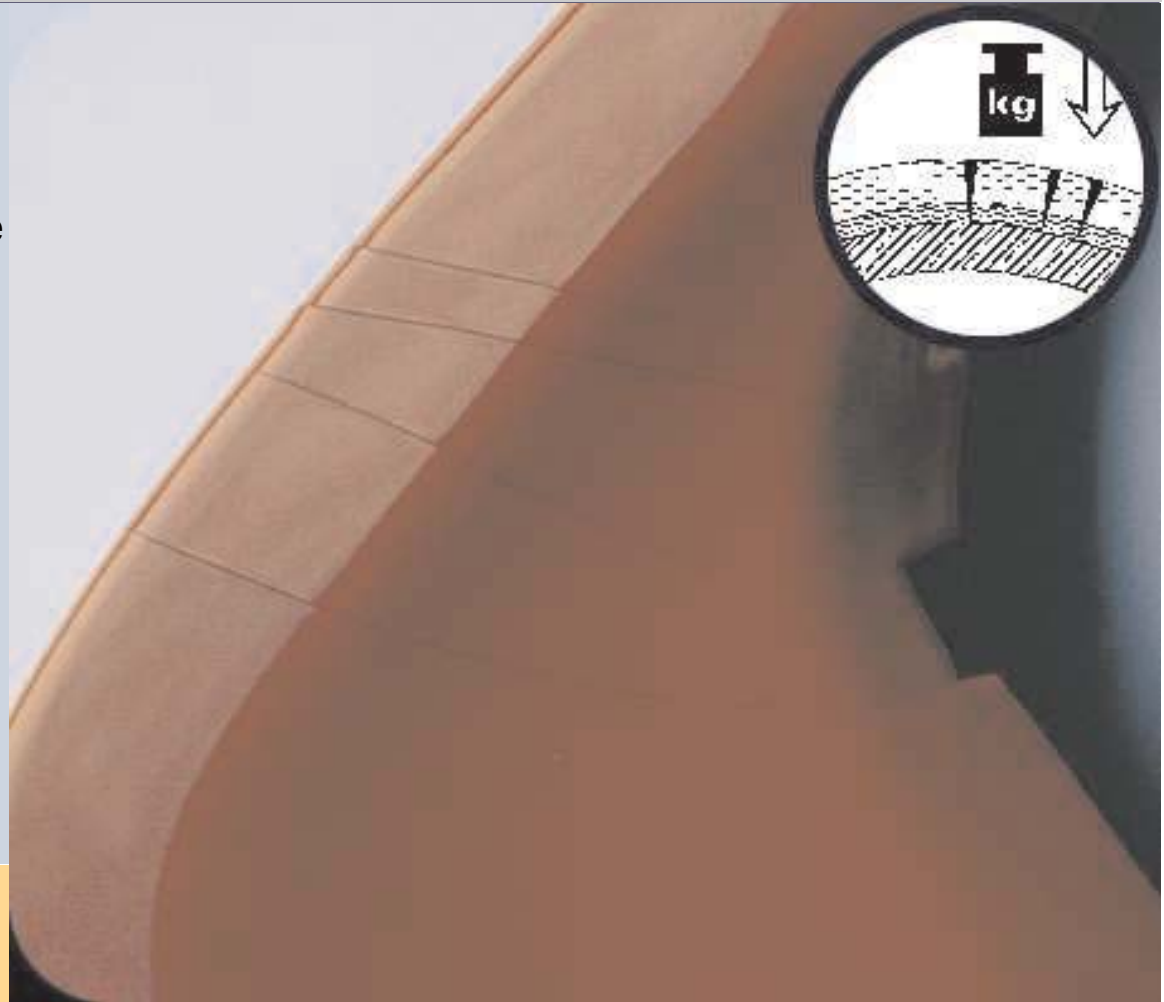
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Paint Defects Advice

Faults in Painting Plastics - Cracking

How to Repair

If possible, remove the paint coats mechanically and then refinish. Do not use normal paint strippers as these could damage or destroy the plastic.



flaking

cracking

pinhole

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Paint Defects Advice

Faults in Painting Plastics - Pinhole

Definition

Small holes in the paint surface due to pores and bubbles in the plastic. This problem often appears on the soft flexible parts (e.g. PUR rear spoilers) and GRP fibre-glass mouldings.



flaking

cracking

pinhole

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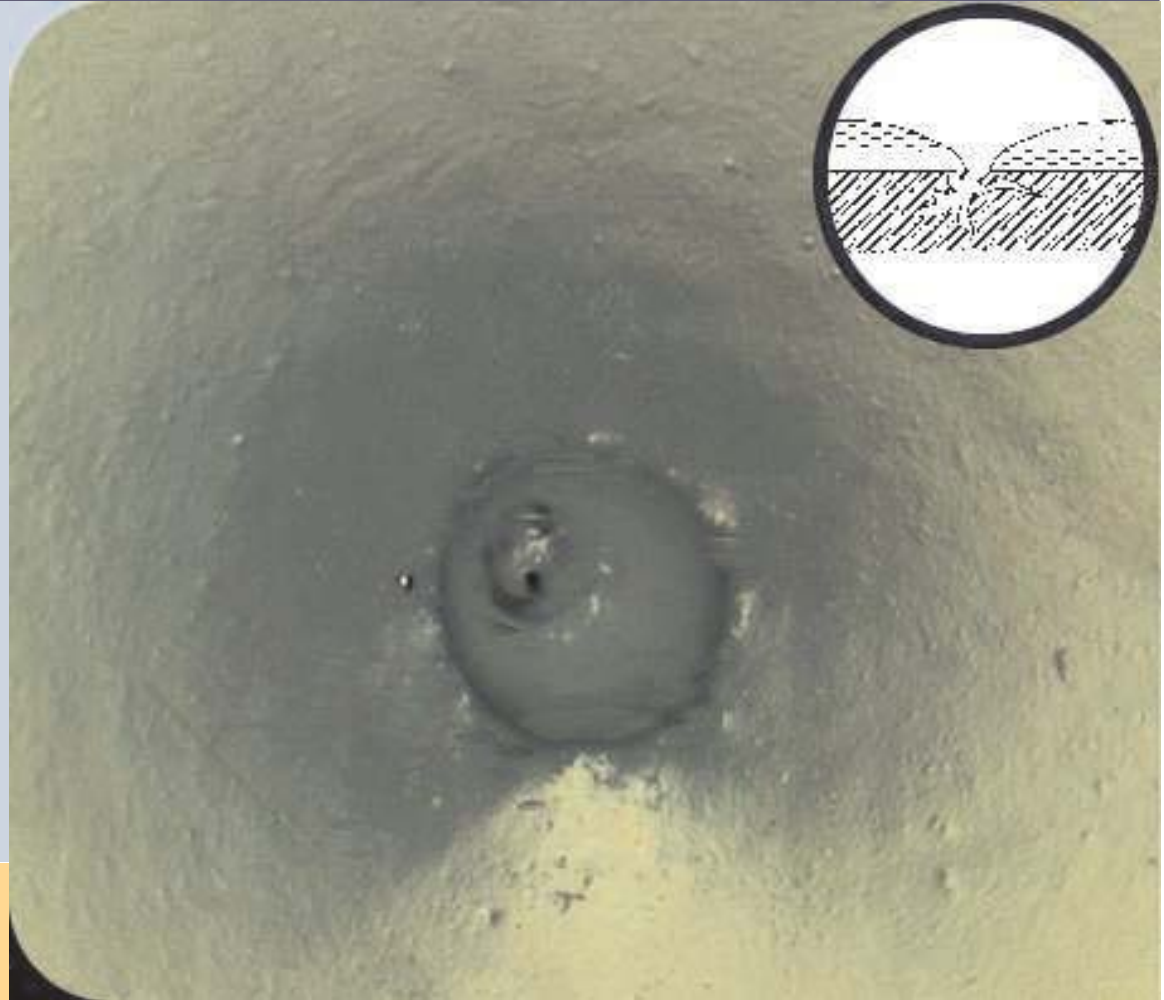
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Paint Defects Advice

Faults in Painting Plastics - Pinhole

Causes

- 1) Expansion faults or foam holes in the plastics from production.



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pinhole

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Paint Defects Advice

Faults in Painting Plastics - Pinhole

How to Prevent

- 1) Thoroughly check the plastic part for pores before painting and where necessary use the pore filler wiping process.



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cracking

pinhole

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Paint Defects Advice

Faults in Painting Plastics - Pinhole

How to Repair

Porous paintwork can, in principal, be repaired using the pore filler wiping process (sand down, porewipe, refinish).

Note: Too many pores in the plastic will make it very difficult to paint. It is important to check the plastic for pores thoroughly before painting.



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cracking

pinhole

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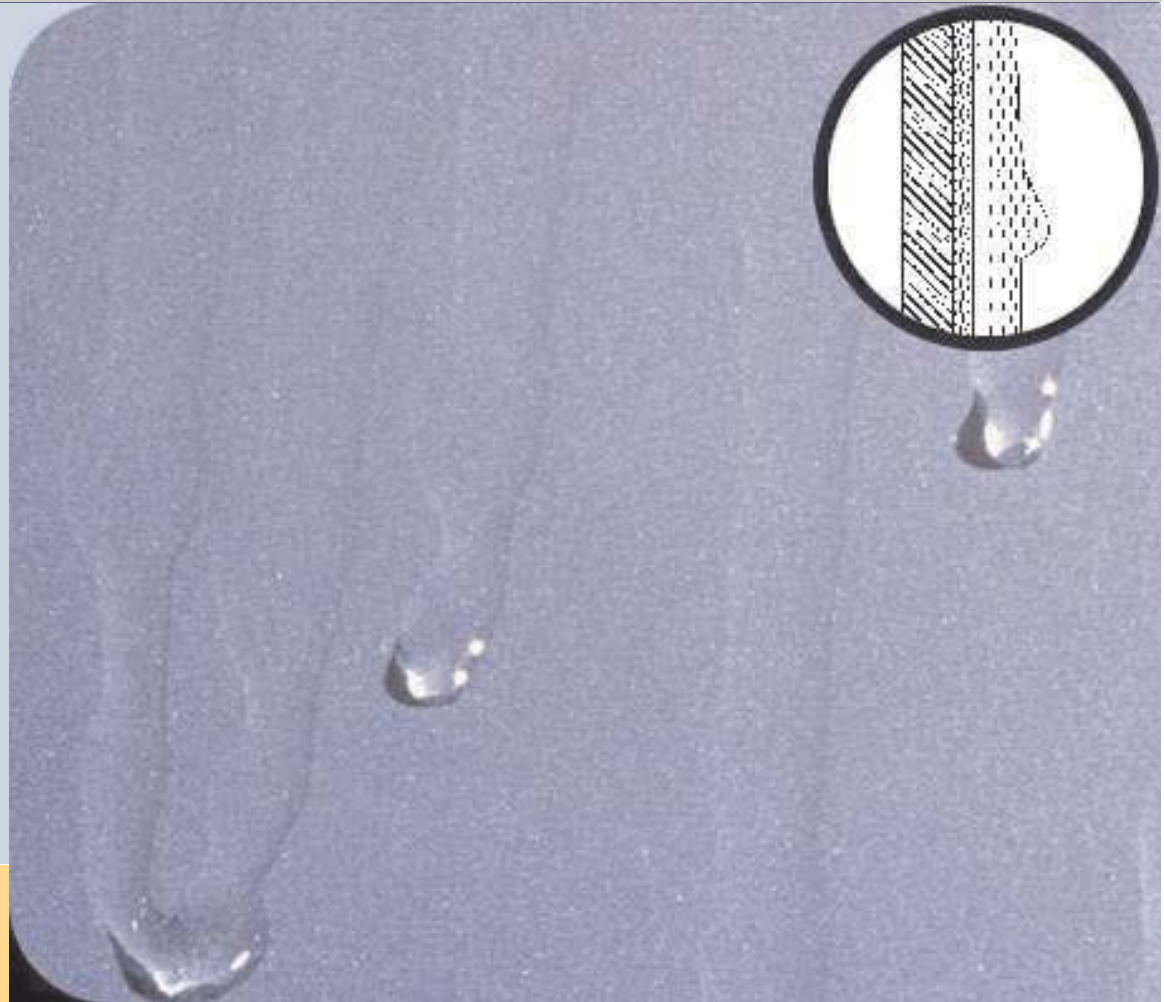
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Paint Defects Advice

Runs

Definition

These are beads, droplets, larger globules or "curtain effect" in the paint finish on vertical surfaces.



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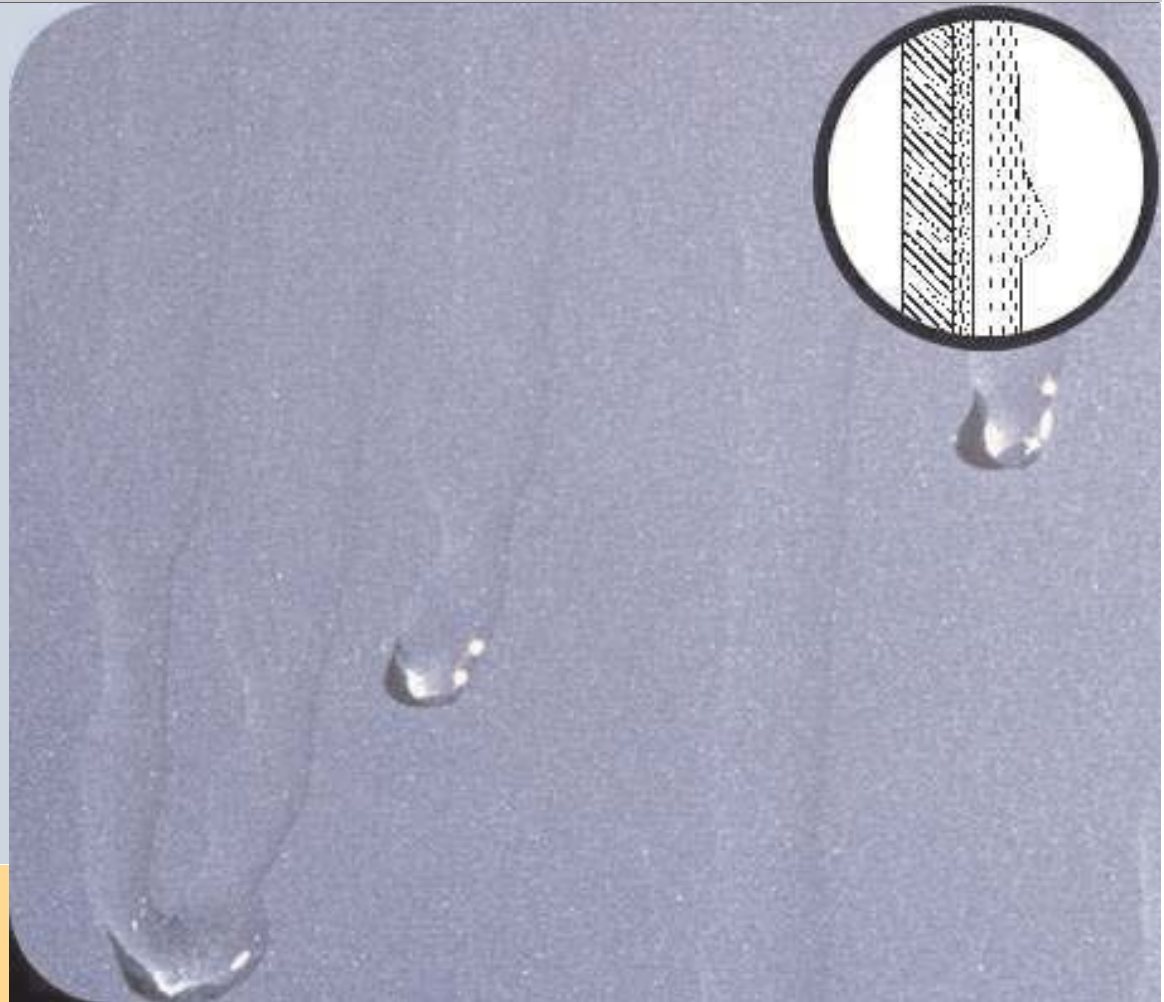
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Paint Defects Advice

Runs

Causes

- 1] Paint mixture too slow (hardener, thinner).
- 2] Viscosity too low (too thin).
- 3] Paint or object to be painted too cold.
- 4] Paint applied too thick.
- 5] Too many layers of paint.
- 6] Flash-off times too short.
- 7] Spray-gun held too close to the object.
- 8] Spray nozzle too large..
- 9] Irregular spraying action (jerky)



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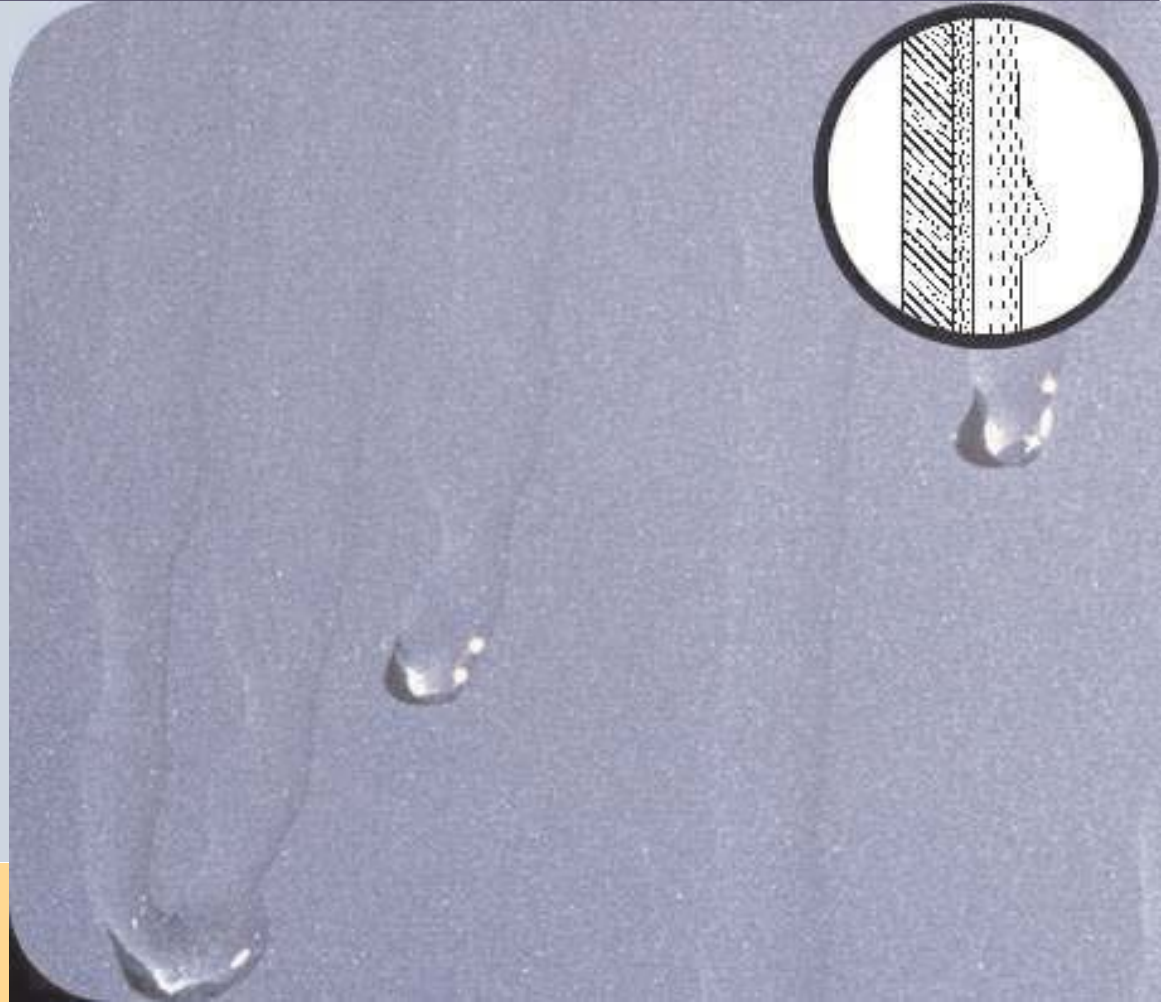
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Paint Defects Advice

Runs

How to Prevent

Ensure that you always adapt the mixture of paint with the correct choice of hardener, thinner and viscosity to suit the temperature and size of paintwork. Ensure that the spray gun is clean and with the correct size of nozzle and air cap. Spray in an even pattern and do not hesitate with the gun or arc your spray pattern.



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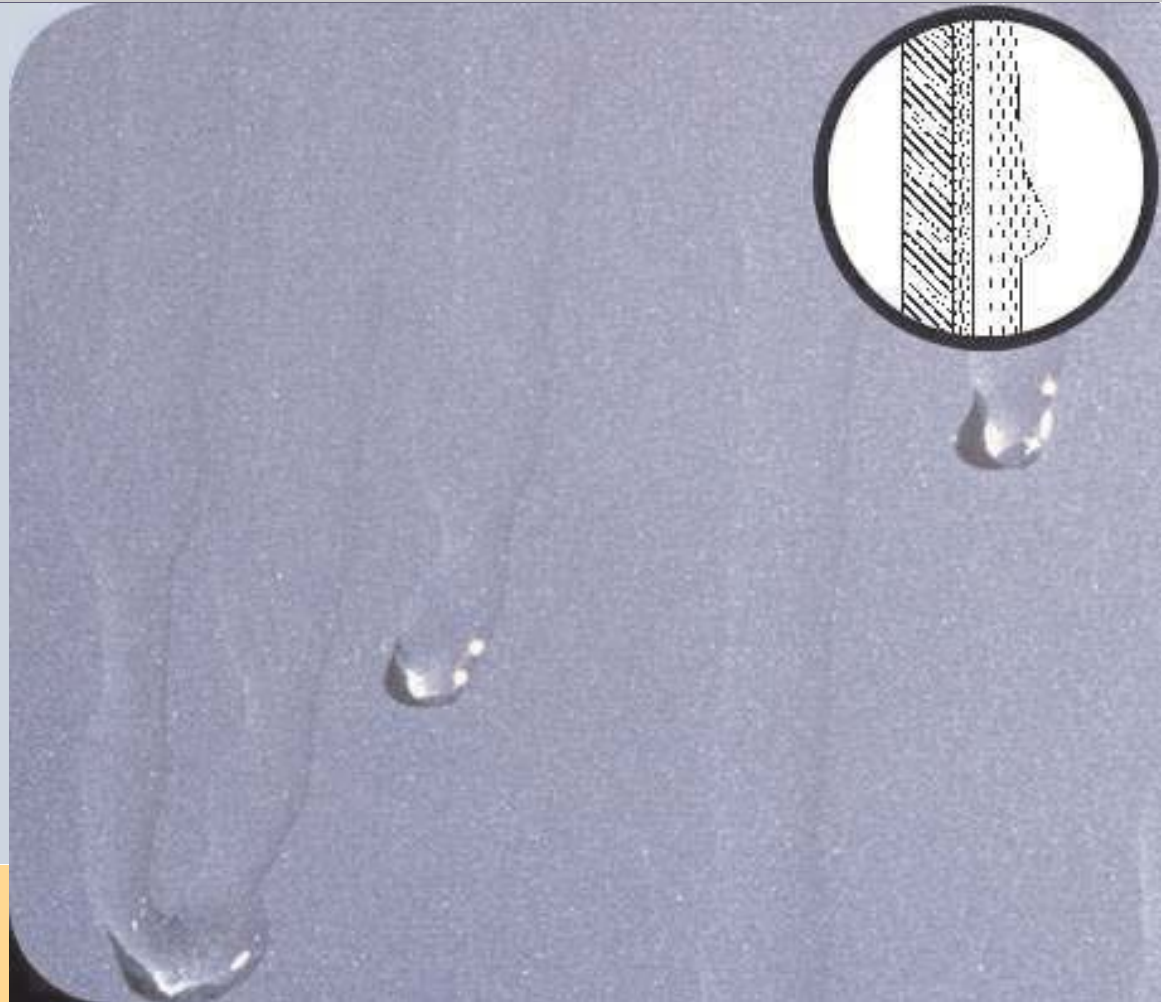
Paint Defects Advice

Runs

How to Repair

When the paint has thoroughly dried, remove the run with the correct choice of sanding block/denibbing tool using a carbon block or wet sanding paper. The finer the paper, the less damage to the paint and the easier to polish.

Polish with a fine polishing paste and finish with a high gloss polish.



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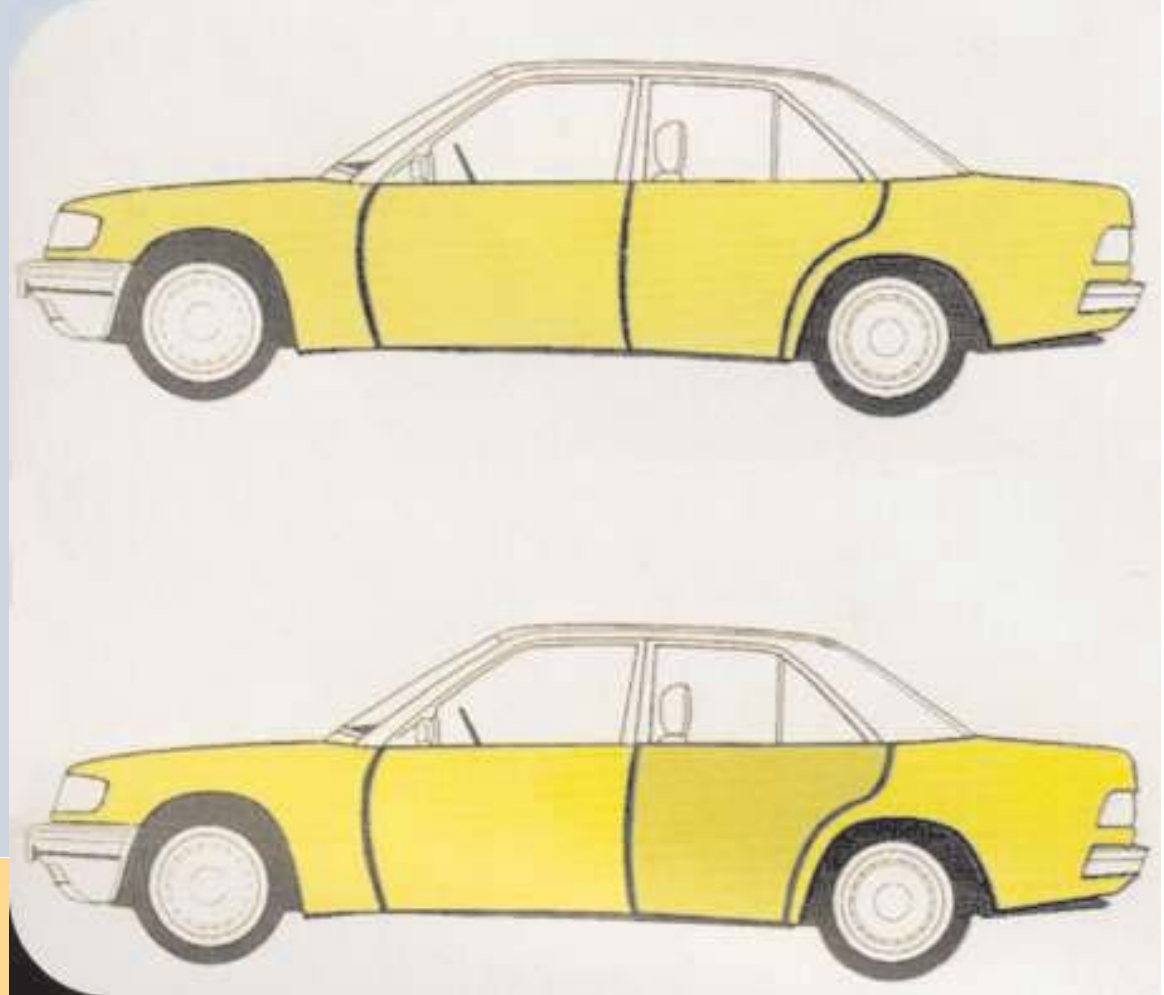
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Paint Defects Advice

Metamerism

Definition

Metamerism is the effect where a colour that appears the same shade to a second colour under certain conditions, may look totally different under different conditions. The most common existence of this problem is where two colours match in daylight, but appear different under artificial light (especially sodium street lighting).



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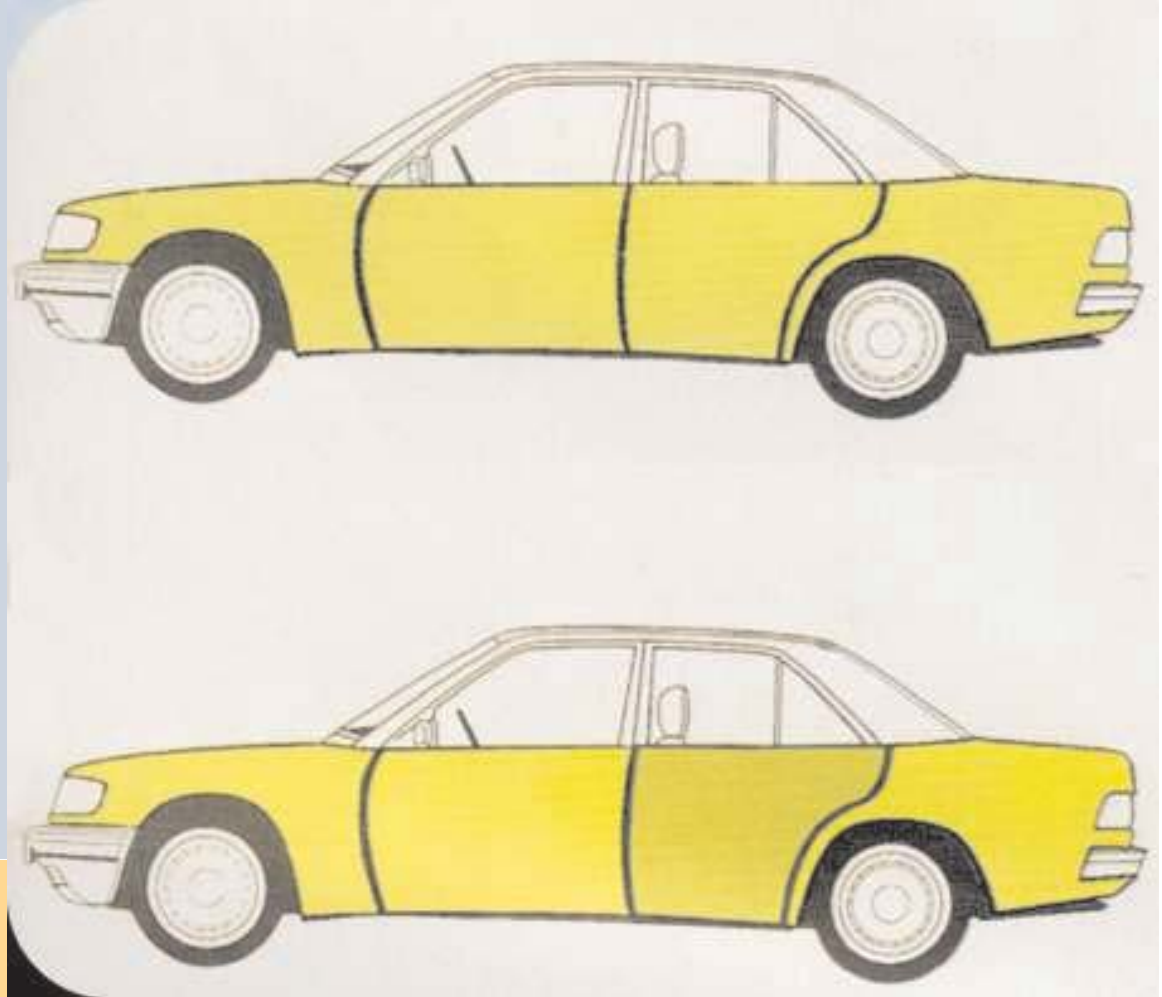
Paint Defects Advice

Metamerism

Causes

Apart from the individual nature and the many variations of human colour perception, there are various other reasons for the occurrence of metamerism.

- 1] The pigment and/or base-colour composition of the repair paint does not correspond to the pigment composition of the original paint.
- 2] The mixing of an unknown colour shade (where no mixing formula is available) without checking the shade under different light sources before use.
- 3] By tinting a colour without reference to the base colours used in the colour formulation, i.e. tinting with a base colour which is not part of the original colour formulation.



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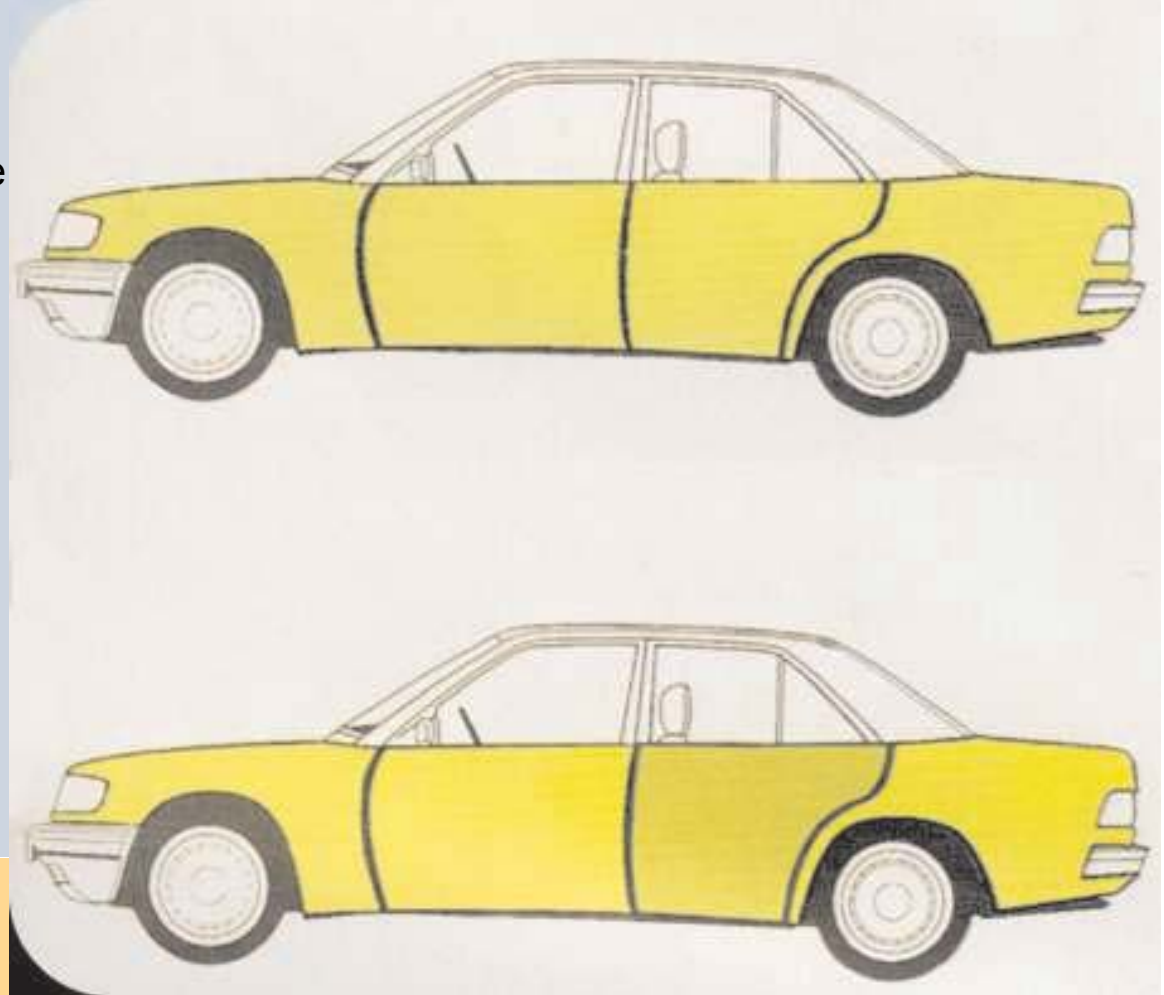
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Paint Defects Advice

Metamerism

How to Prevent

For previous unknown colour shades, metamerism can only be avoided with the use of electronic colour measurement. For known shades (where a mixing formula is available), the shade must be checked under various light sources. Tint only with base colours which form part of the mixing formula and/or as specified in the tinting table.



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Paint Defects Advice

Metamerism

How to Repair

Slight variations in colour due to metamerism can be overcome by blending the colour into the surrounding panels. For severe metamerism, the colour shade must be re-mixed or reassessed by electronic colour measurement.



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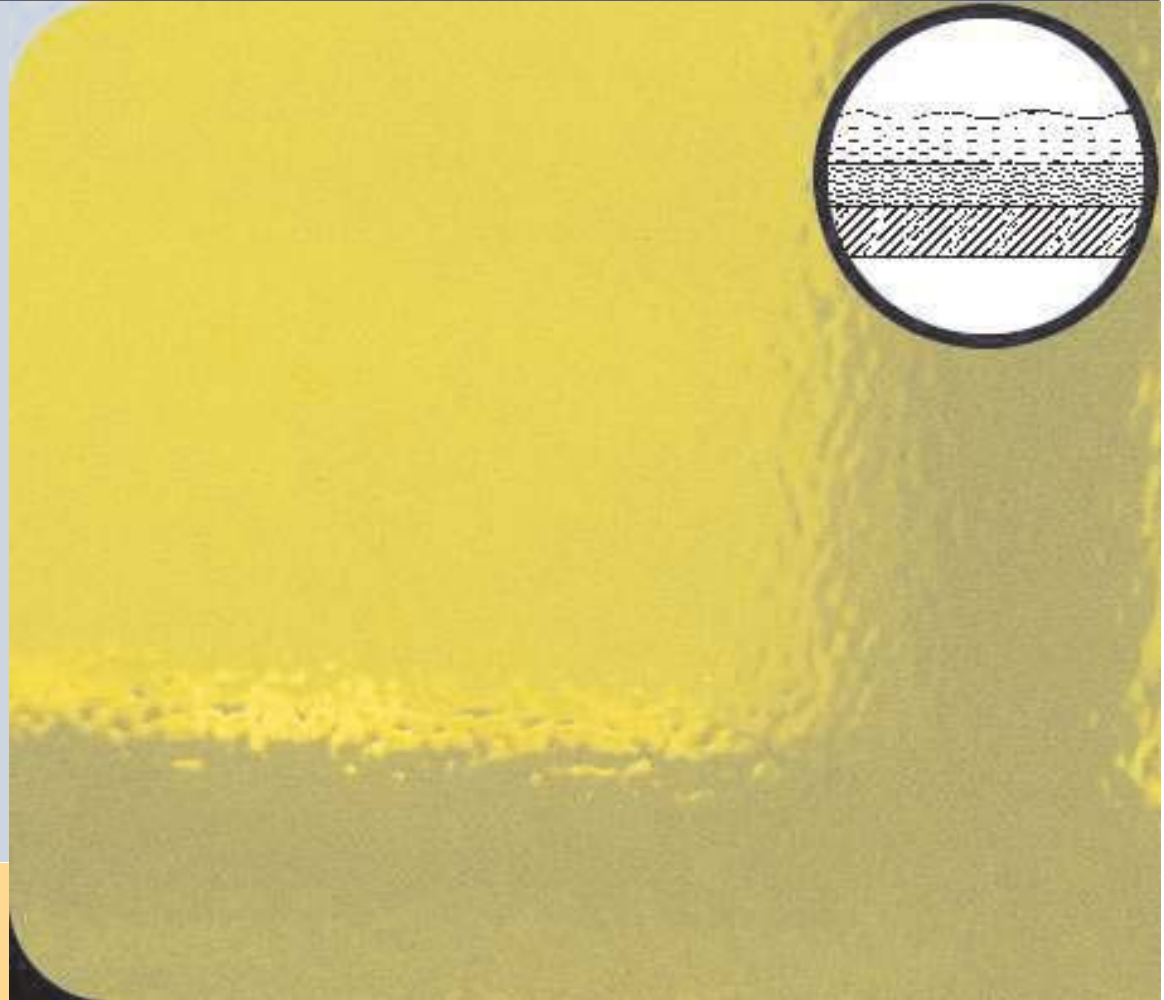
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Paint Defects Advice

Orange-Peel Effect

Definition

Poor surface texture of the paint similar to the surface texture of an orange skin.



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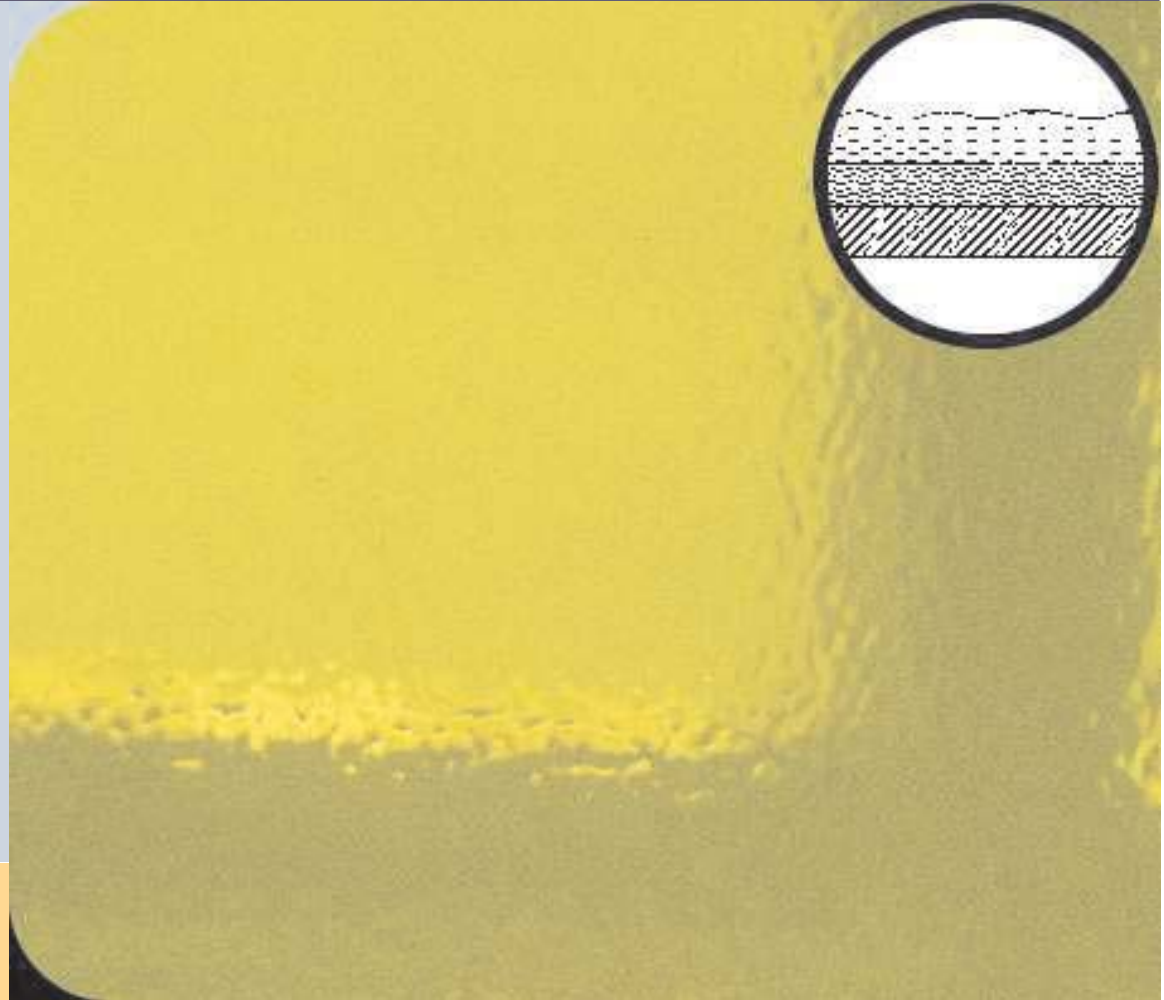
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Paint Defects Advice

Orange-Peel Effect

Causes

- 1) Spray gun held too far from object.
- 2) Spray pressure too low (poor atomisation).
- 3) Paint film too thin.
- 4) Viscosity too high.(paint too thick).
- 5) Hardener and/or thinner too fast for the conditions or size of object.
- 6) Spray nozzle too small.
- 7) Flash-off time too long between coats.



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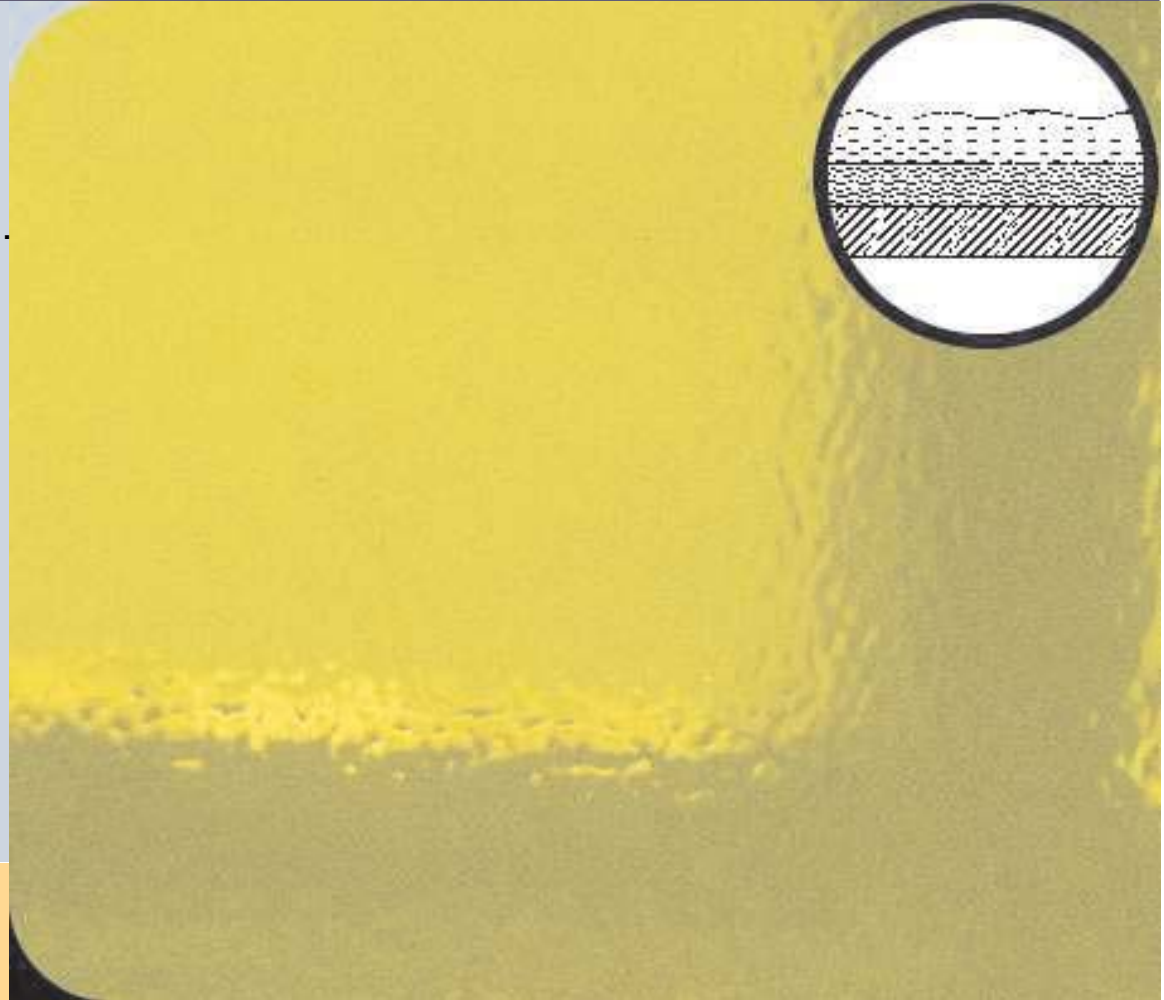
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Paint Defects Advice

Orange-Peel Effect

How to Prevent

- 1] Keep spray gun within the recommended distance from the object.
- 2] Ensure spray pressure is as recommended.
- 3] Always apply wet coats.
- 4] Adjust paint viscosity as recommended.
- 5] Choose correct hardener and thinner (> temperature table).
- 6] See tech data for correct choice of spray nozzle.
- 7] Allow a long enough flash-off between coats.



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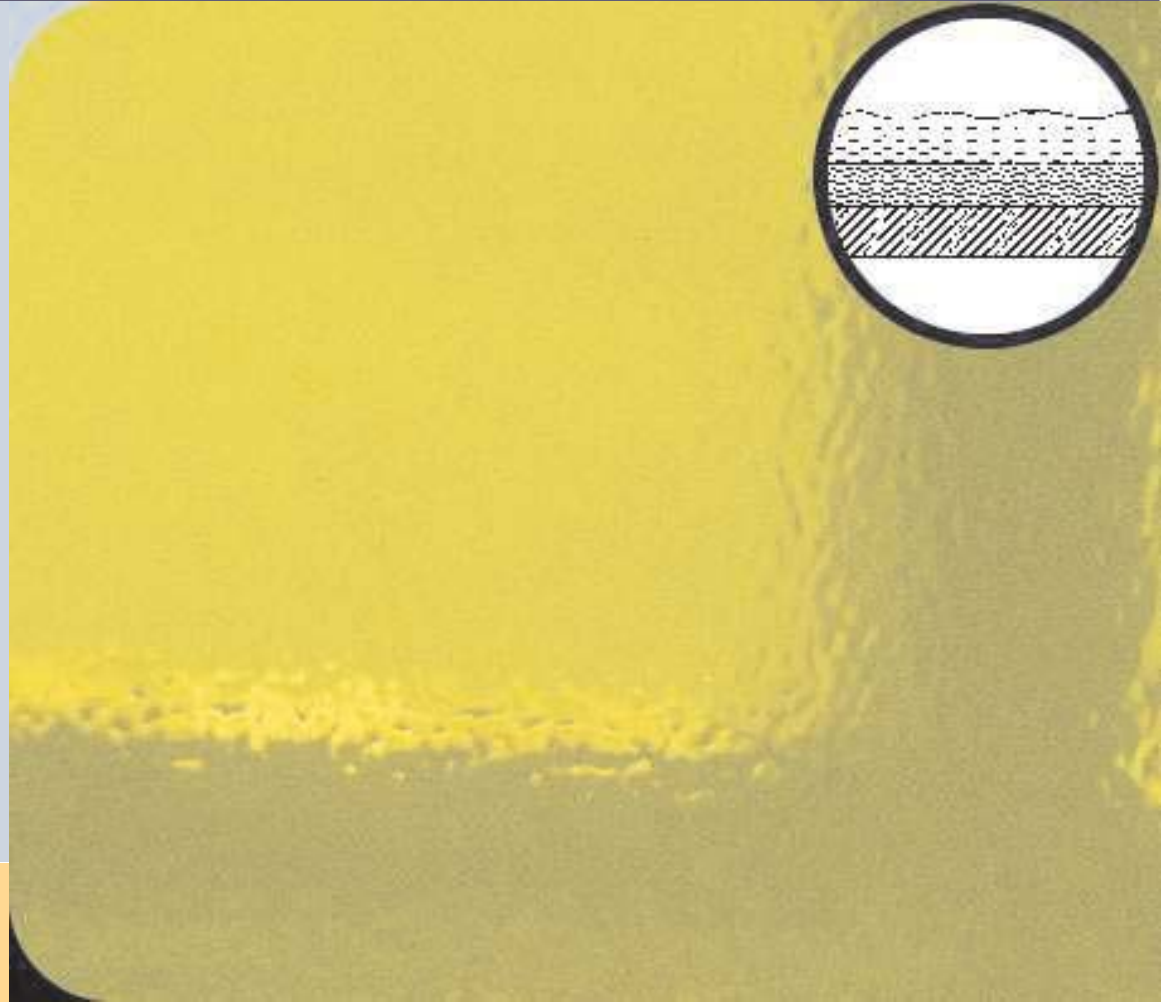
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Paint Defects Advice

Orange-Peel Effect

How to Repair

If the problem is only slight, sand down with P1200, polish with a fine polishing paste and finish with a high gloss polish.



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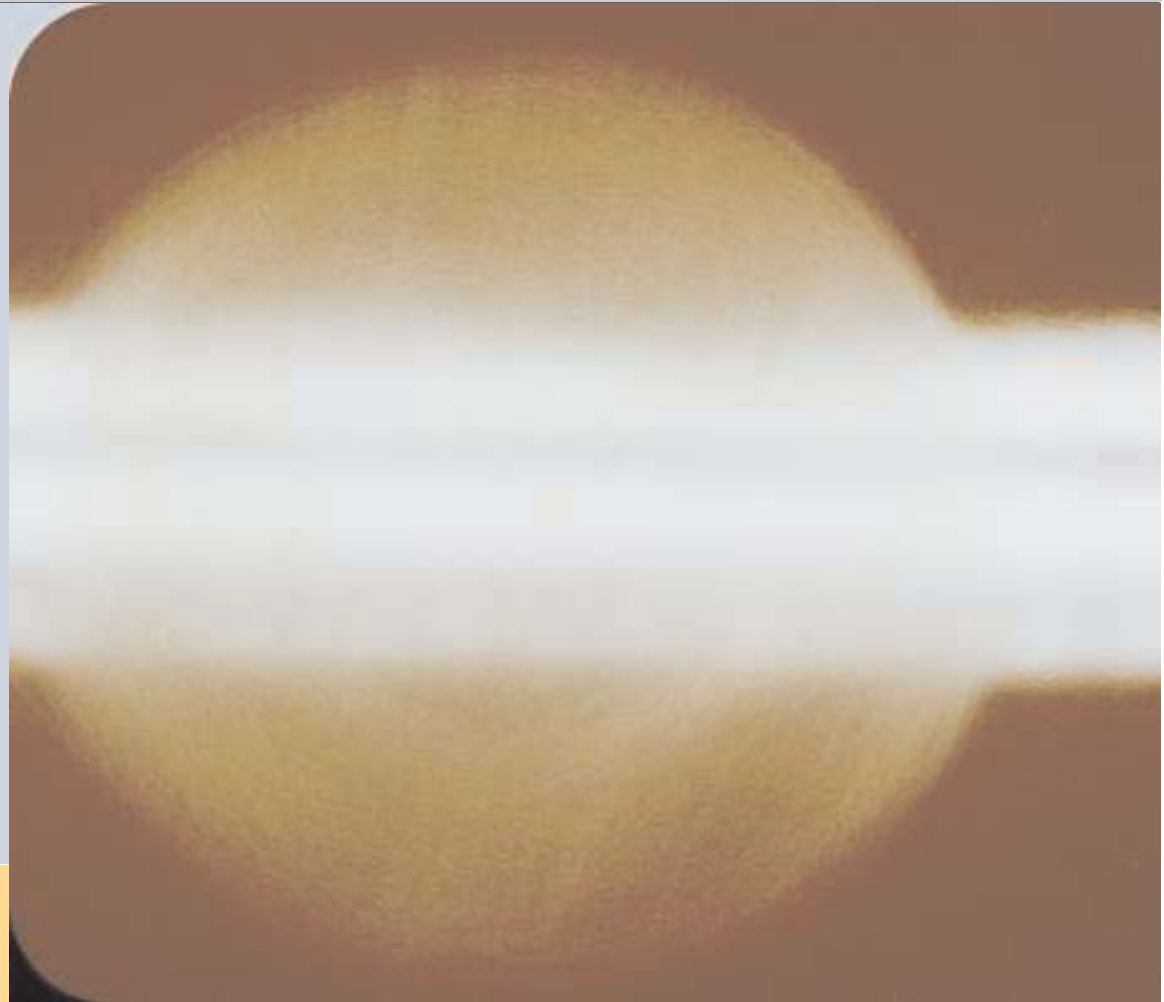
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Paint Defects Advice

Polishing Marks

Definition

Very fine lines in the paint surface with a low gloss greyish appearance from polishing paste and/or cloth.



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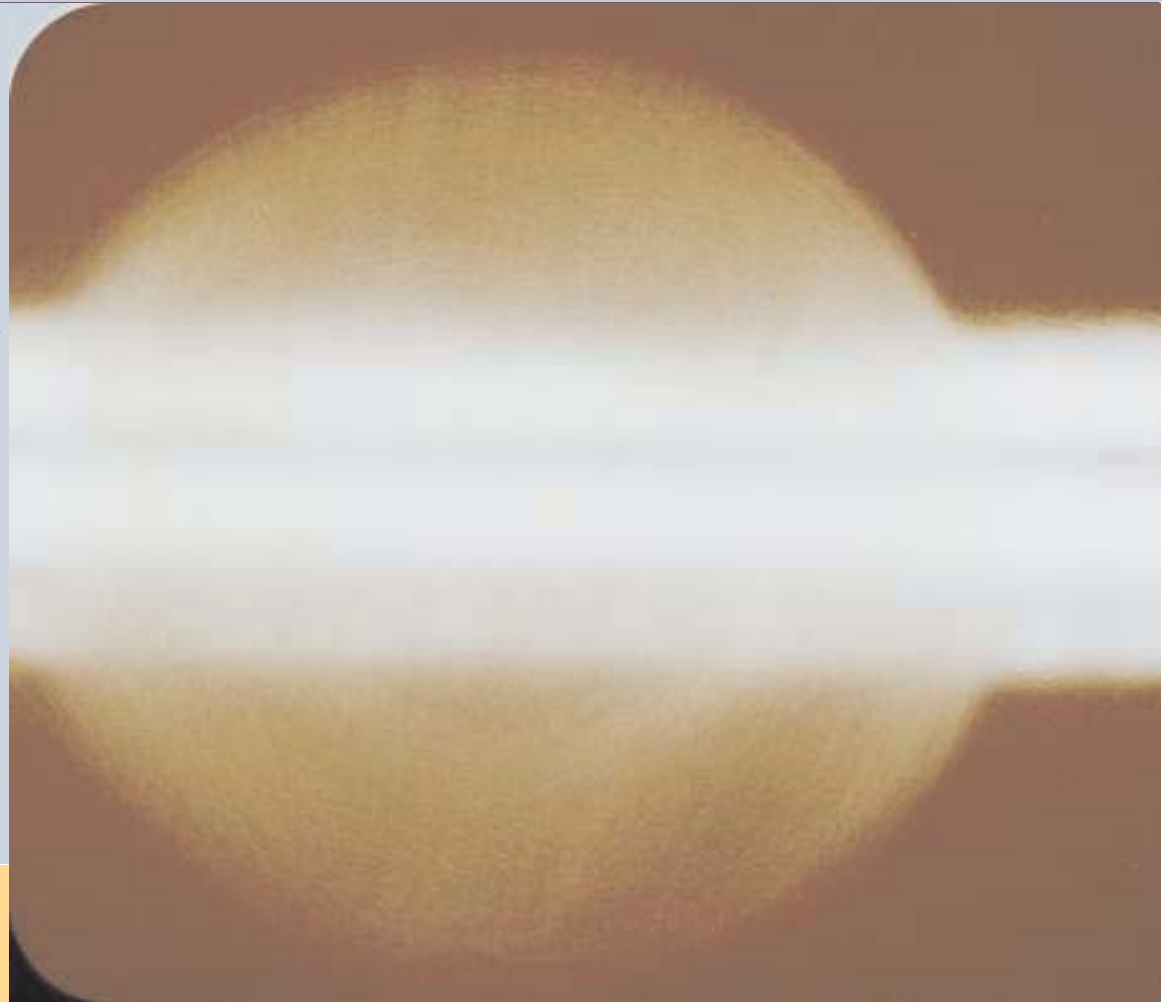
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Paint Defects Advice

Polishing Marks

Causes

- 1] The sensitivity of the paint surface to polishing marks is greater when: the paint has not been allowed to dry for long enough; the film thickness is too high; the incorrect choice or amount of hardener has been used.
- 2] Excessive pressure has been exerted on the polishing machine, (polish burnt in).
- 3] Polishing machine tilted during polishing process.
- 4] Wrong polishing head.
- 5] Aggressive/coarse polishing paste.
- 6] Polishing when the painted surface is too hot from the oven or in direct sun light.



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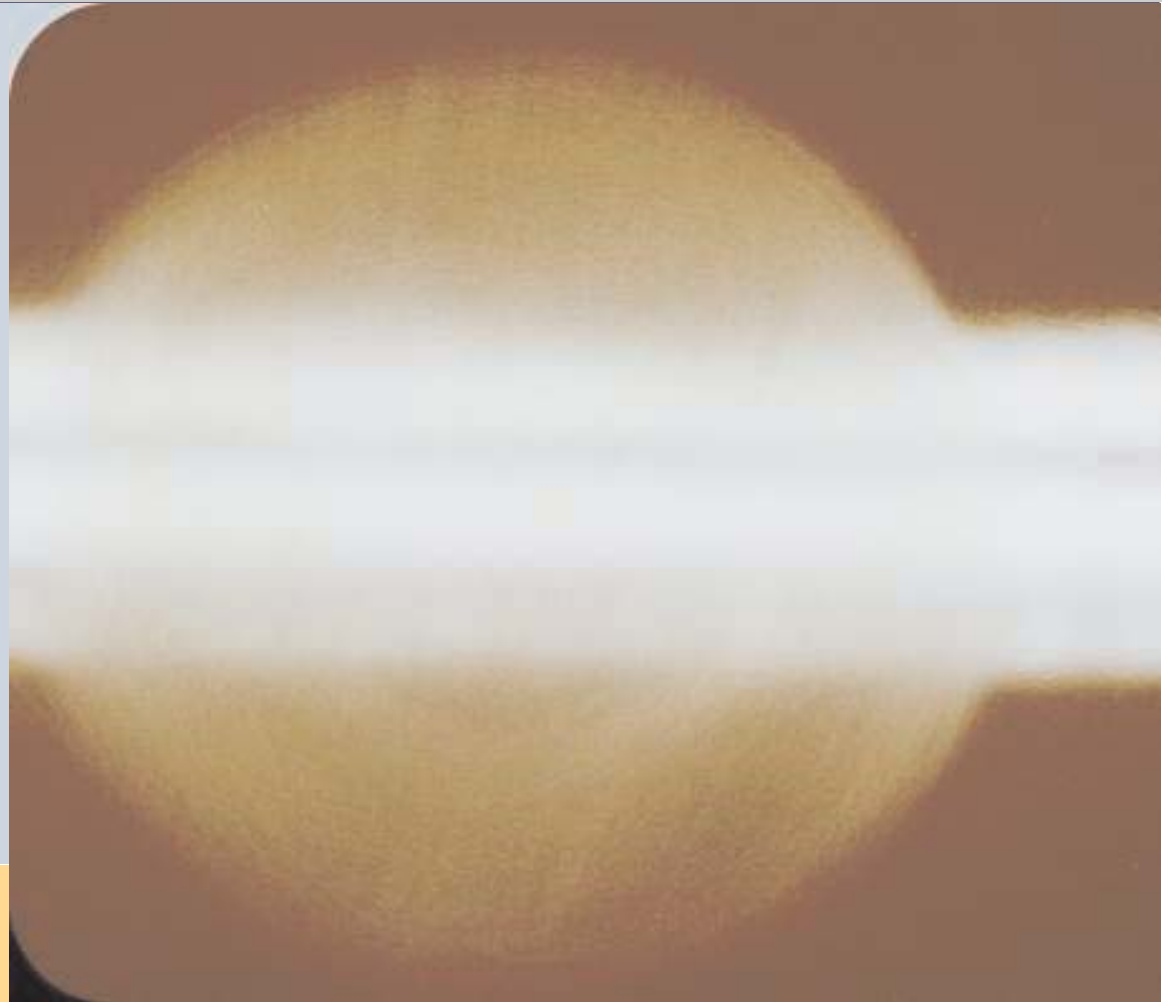
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Paint Defects Advice

Polishing Marks

How to Prevent

- 1] Ensure only the correct film thickness, drying times and choice of hardener and thinner are observed. Before polishing, allow the paint layers to dry sufficiently (rebake using Infra Red if necessary).
- 2+3+4] Do not press too hard or tilt the polishing head and use the correct head for the application being carried out.
- 5] Do not use too coarse a polishing paste.
- 6] Ensure that the paint surface is cool and/or not in the sun.



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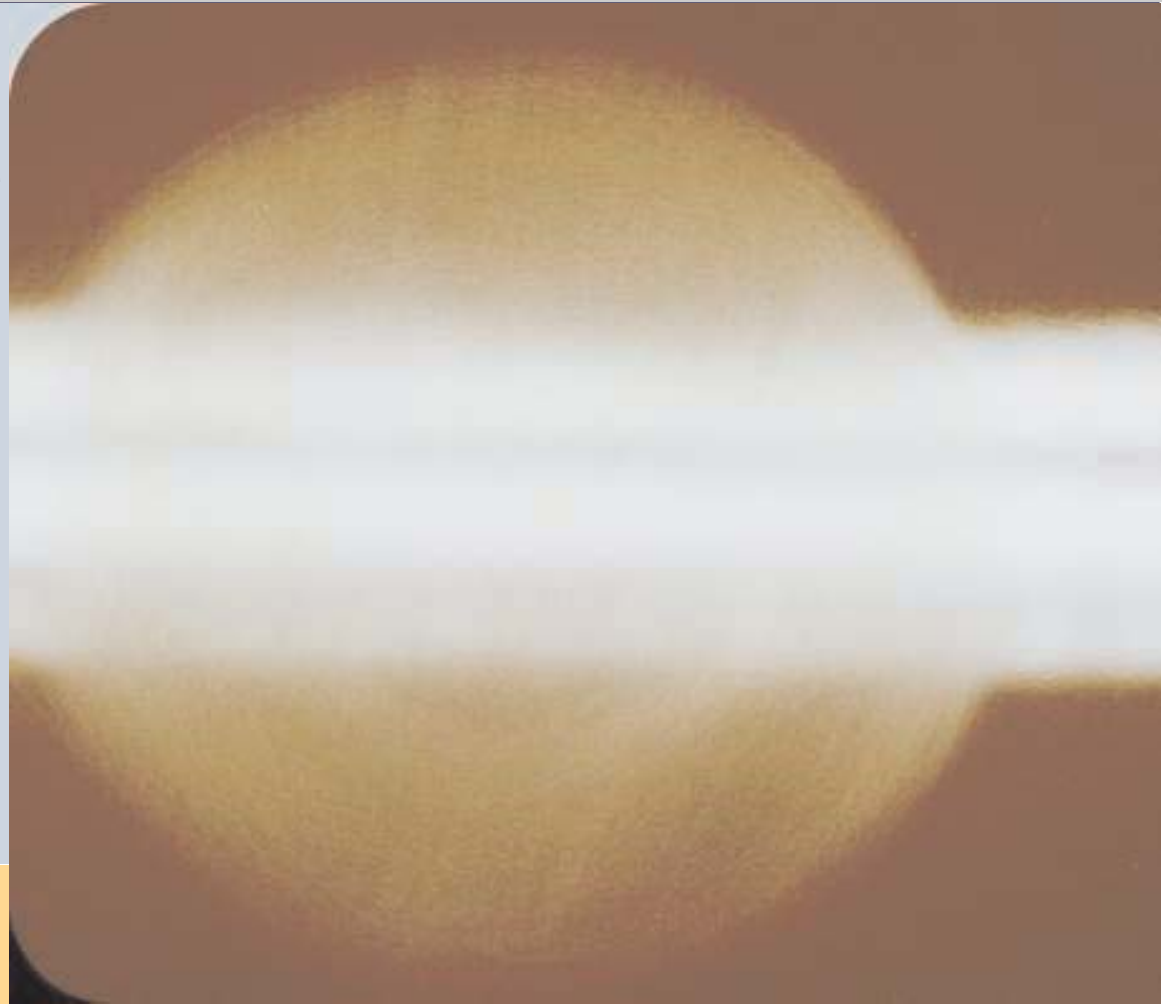
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Paint Defects Advice

Polishing Marks

How to Repair

Polish out the problem with a high gloss polish. If the problem is more severe, first use a fine polishing paste.



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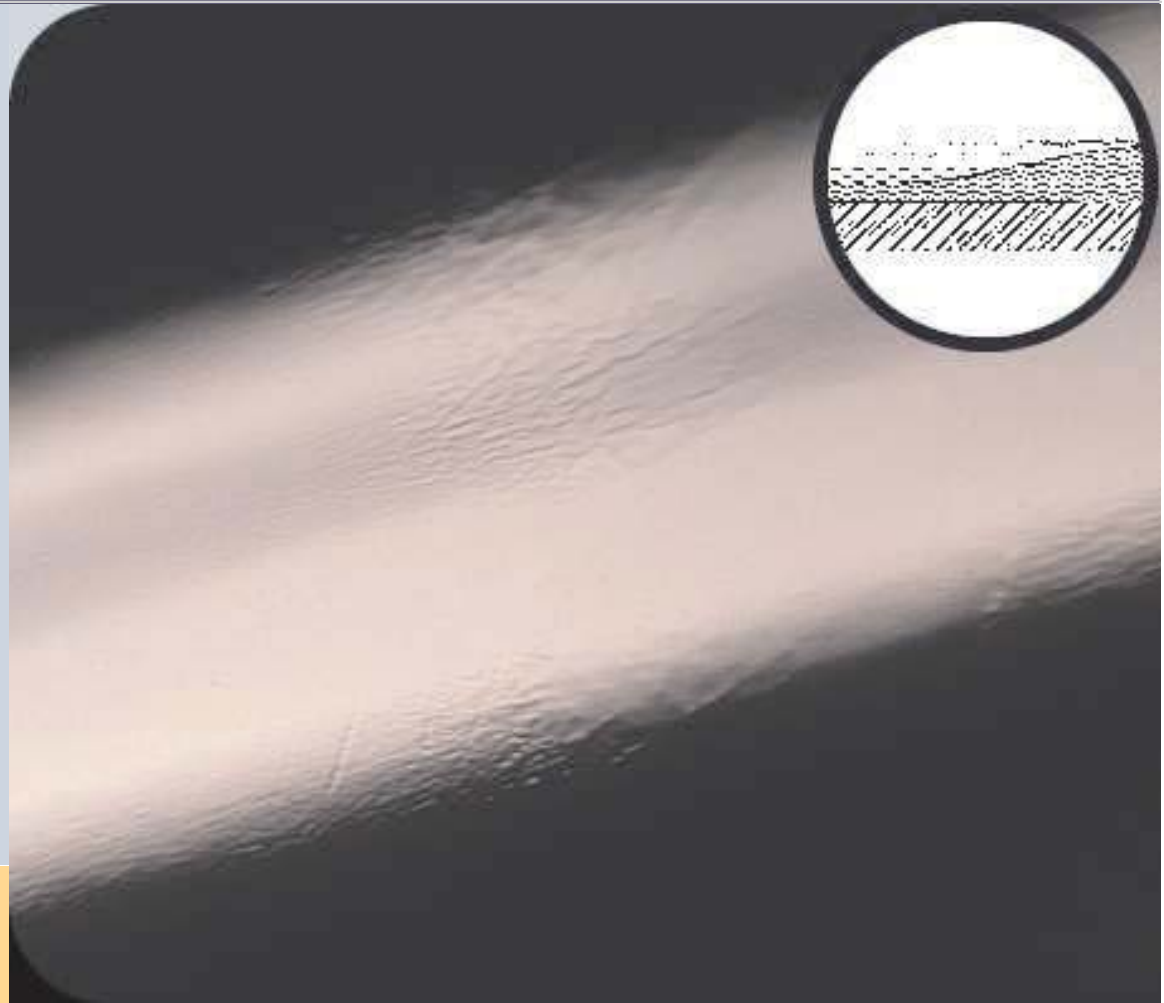
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Paint Defects Advice

Edge Marking

Definition

Swelling or sweated edges showing in the top-coat around feather-edge sanded old paintwork



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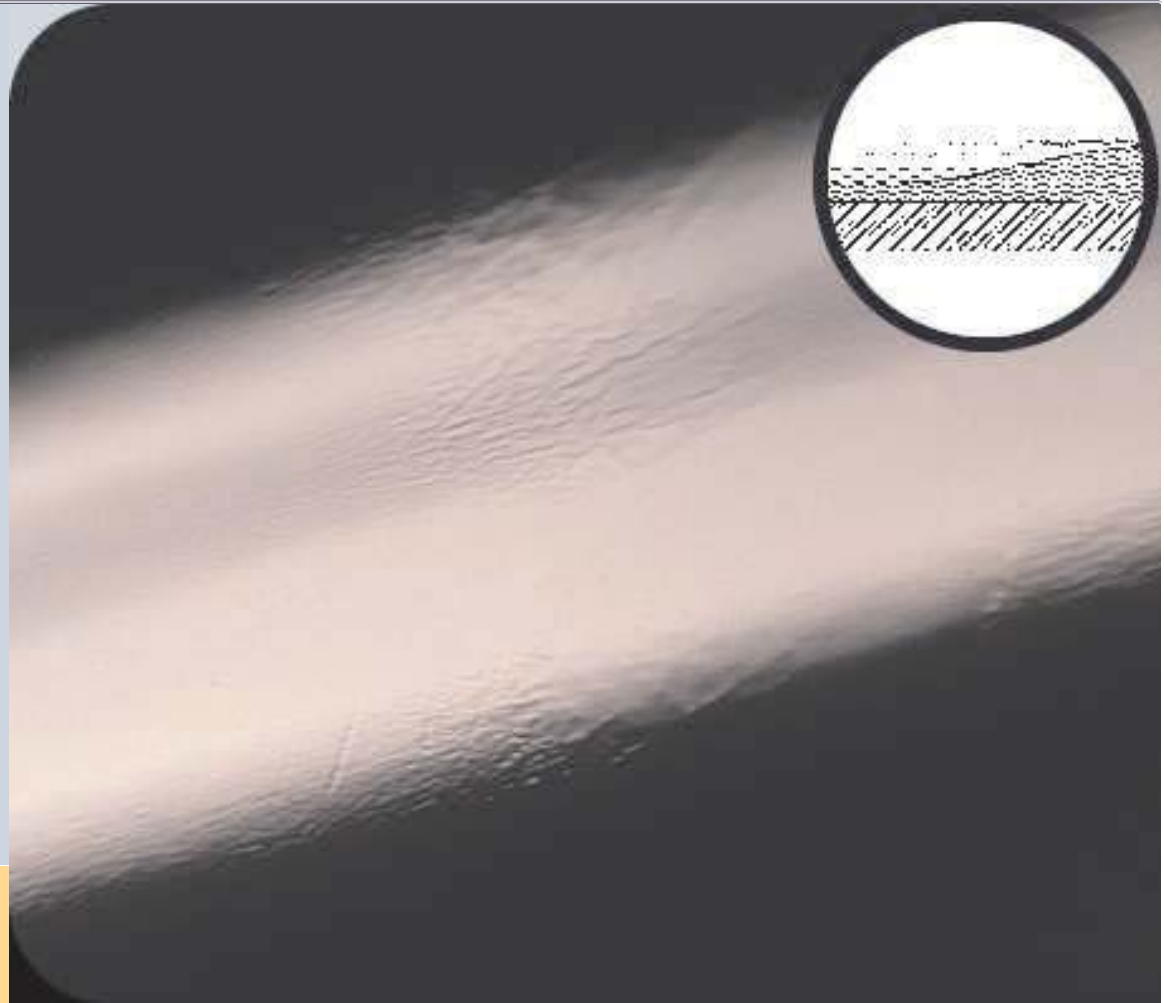
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Paint Defects Advice

Edge Marking

Causes

- 1) Insufficient drying of filler and/or knifing stopper areas.
- 2) Swelling layer in the old paint at a feather edge sanded area where the layer of filler meets the old paint or metal. Or the feathered edge was not fine enough.
- 3) Swelling of works primer on new/spare parts.
- 4) Wrong process used over TPA or NC old finishes.
- 5) Sanded areas not isolated properly before base-coat and clear processing.



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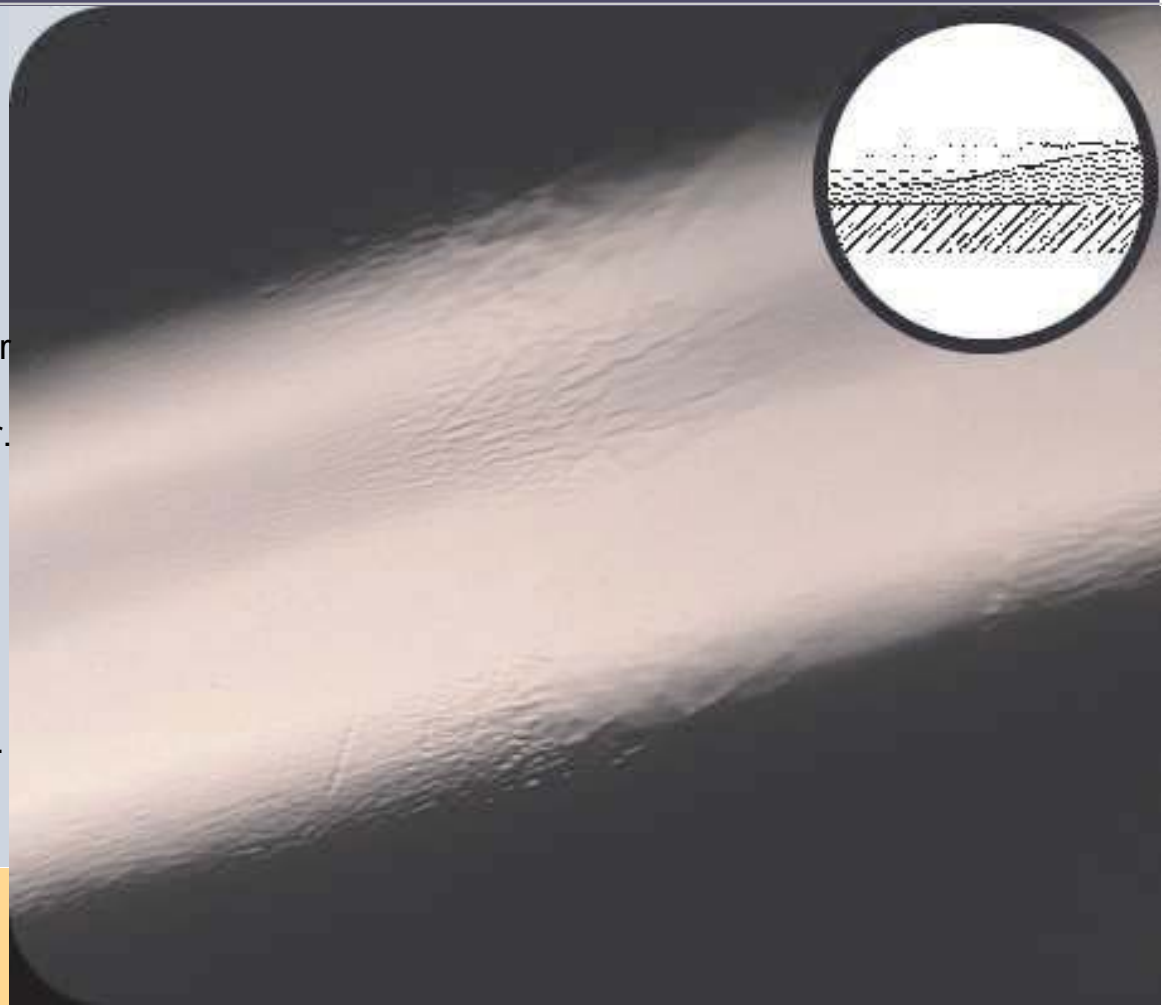
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Paint Defects Advice

Edge Marking

How to Prevent

- 1] Ensure drying times are observed. Infra Red drying reduces the chances of edge marking by drying the lower layers first.
- 2]+3] Before painting, carry out a solvent test with an Acrylic or NC Thinner to check for solvent sensitivity. When sanding, ensure that the feather edge is fine enough on the layer being sanded (P80/P150) on stopper/filler, P240 on primer filler. Do not apply knifing fillers over sensitive paintwork (apply to bare metal only and leave a metal edge). Apply spray filler in light coats to isolate. Use paint with mild solvent properties.
- 4] Observe correct mixing ratios.
- 5] Use appropriate finishing system.
- 6] Isolate sanded base with light coats of spray filler.



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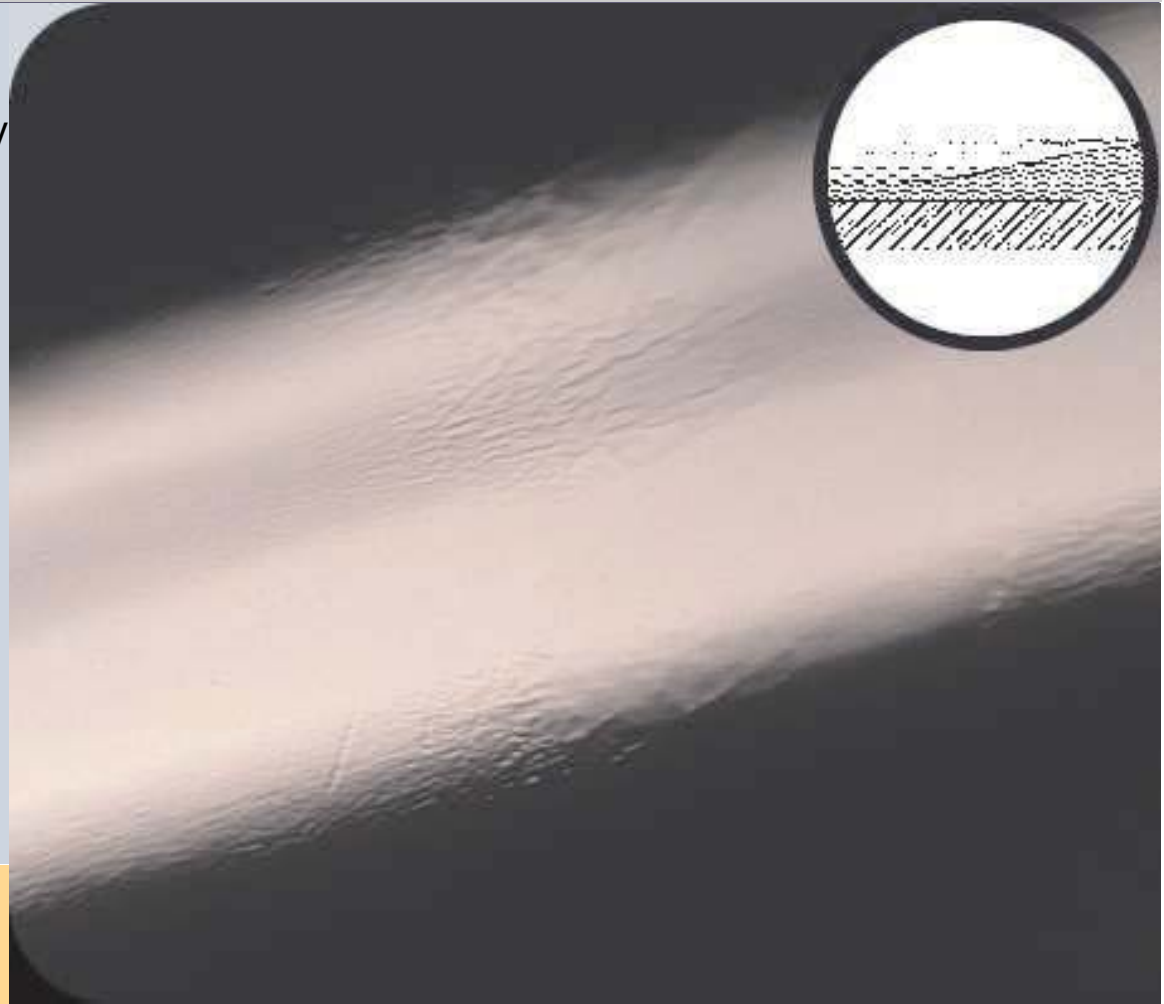
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Paint Defects Advice

Edge Marking

How to Repair

Sand affected areas smooth and flat. Respray with the correct primer and/or top-coat.



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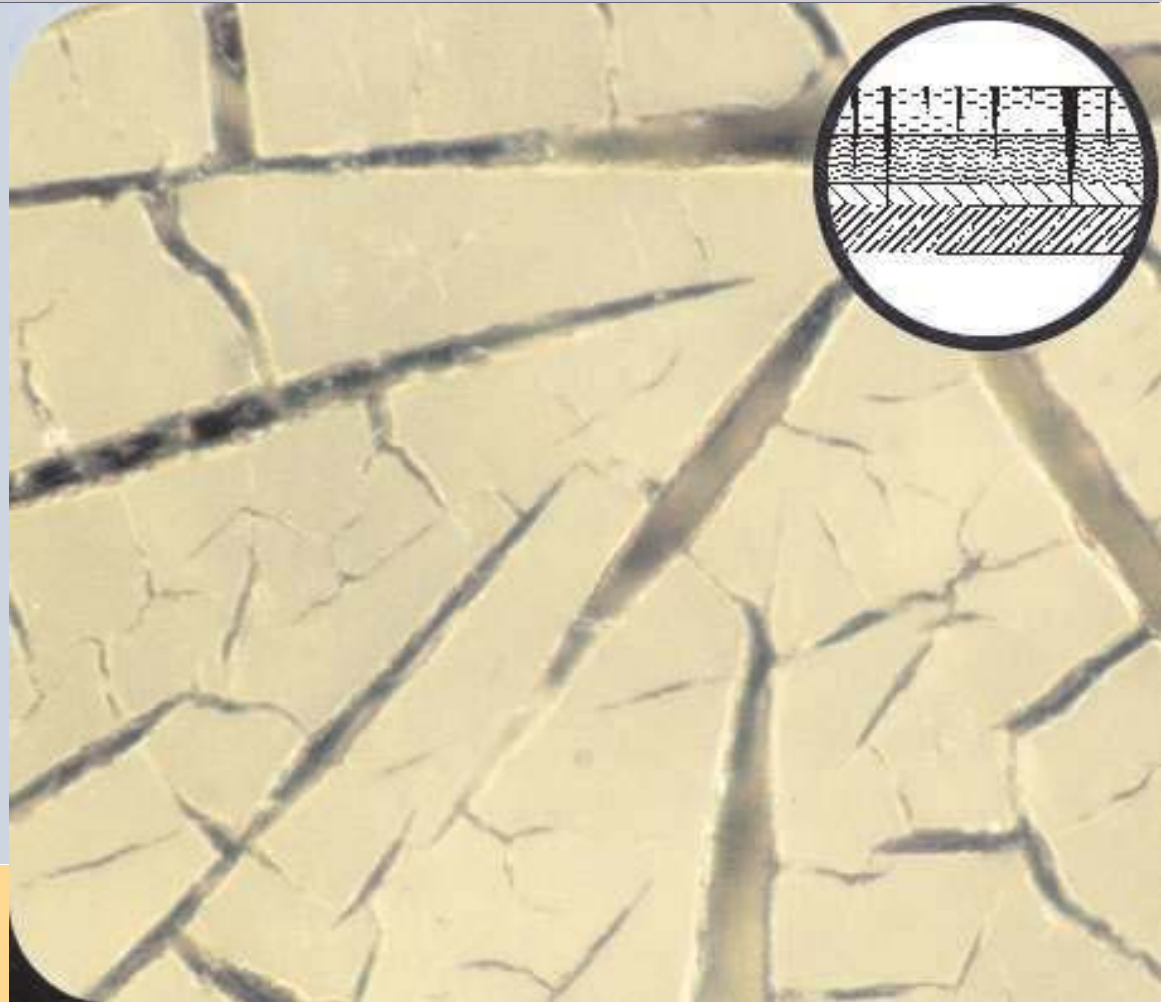
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Paint Defects Advice

Cracking, Crazeing

Definition

Cracks of various lengths, widths and depths.



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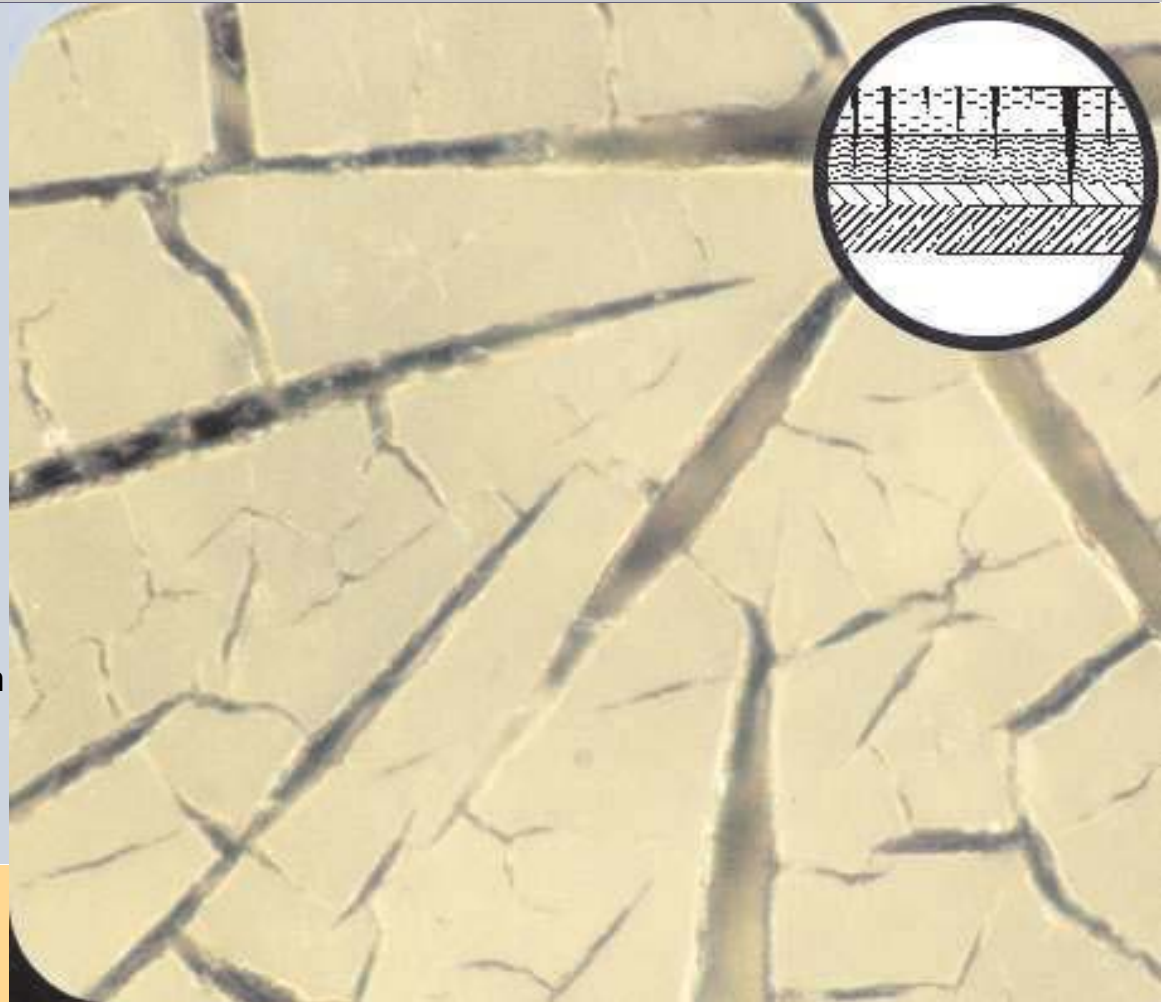
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Paint Defects Advice

Cracking, Crazeing

Causes

- 1] Film build faults on TPA Thermoplastics Acrylic substrates (e.g. the use of polyester filler, wash primer or synthetic enamels directly onto TPA finishes). These will cause shrinkage of the TPA film resulting in cracking.
- 2] Repair paint layers not cured or hard (too little or no hardener).
- 3] Film Build Faults:
 - Wash primer coated with polyester materials.
 - Synthetic enamel or nitro-cellulose mixtures repainted too quick.
- 4] Cracks on plastic parts.
 - see chapter "Faults in Plastic Painting".
- 5] Severe stress to the paint surface by UV radiation and/or extreme temperature fluctuations.
- 6] Flash off time too short in wet-on-wet systems.
- 7] Total film build far too high.



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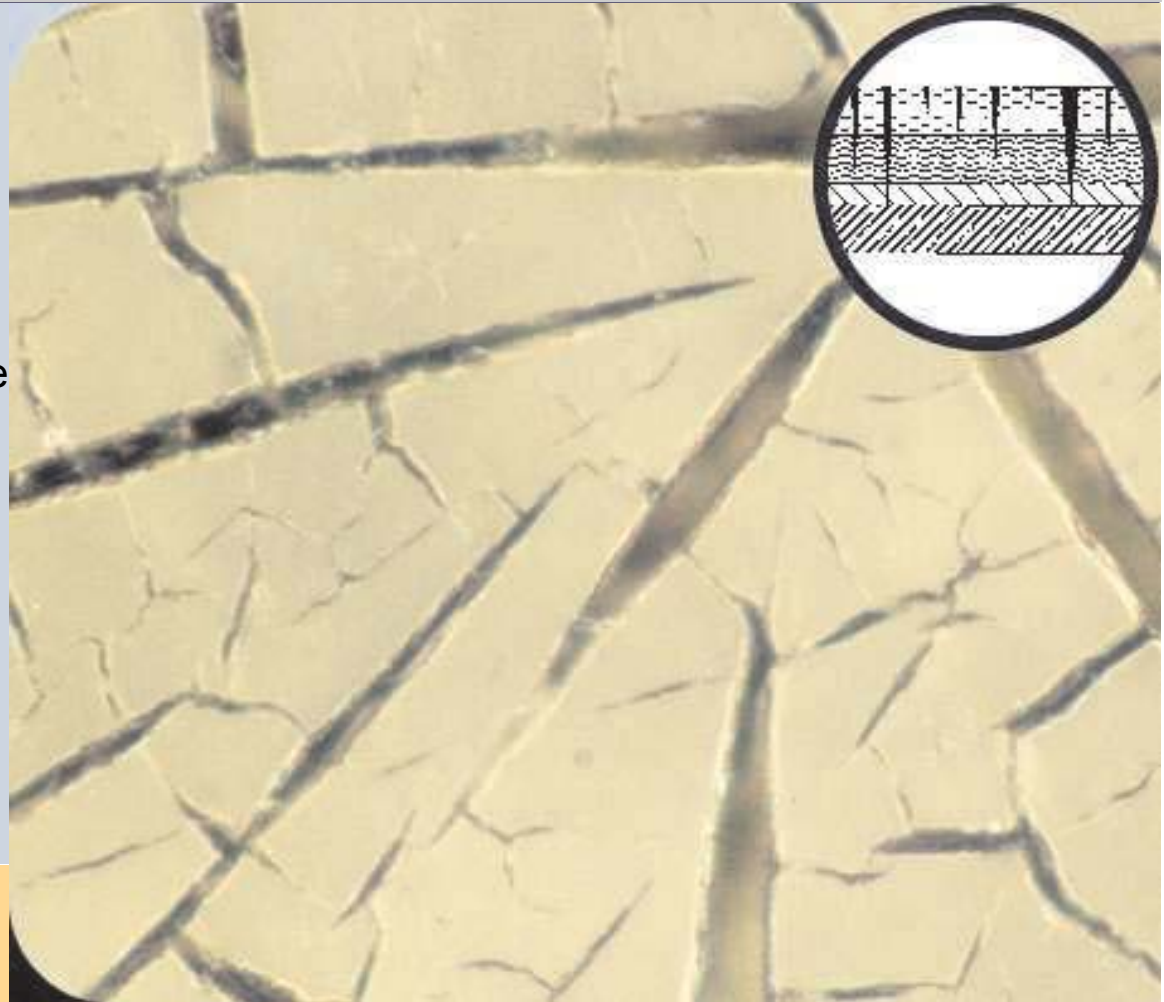
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Paint Defects Advice

Cracking, Crazeing

How to Prevent

- 1] Ensure correct hardener quantities.
- 2] Ensure correct system builds and processes.
- 3] Plasticise materials - see section "Faults in Plastic Painting".
- 4] No cases are known with any current range repair products.
- 5] Ensure correct flash-off times are observed.



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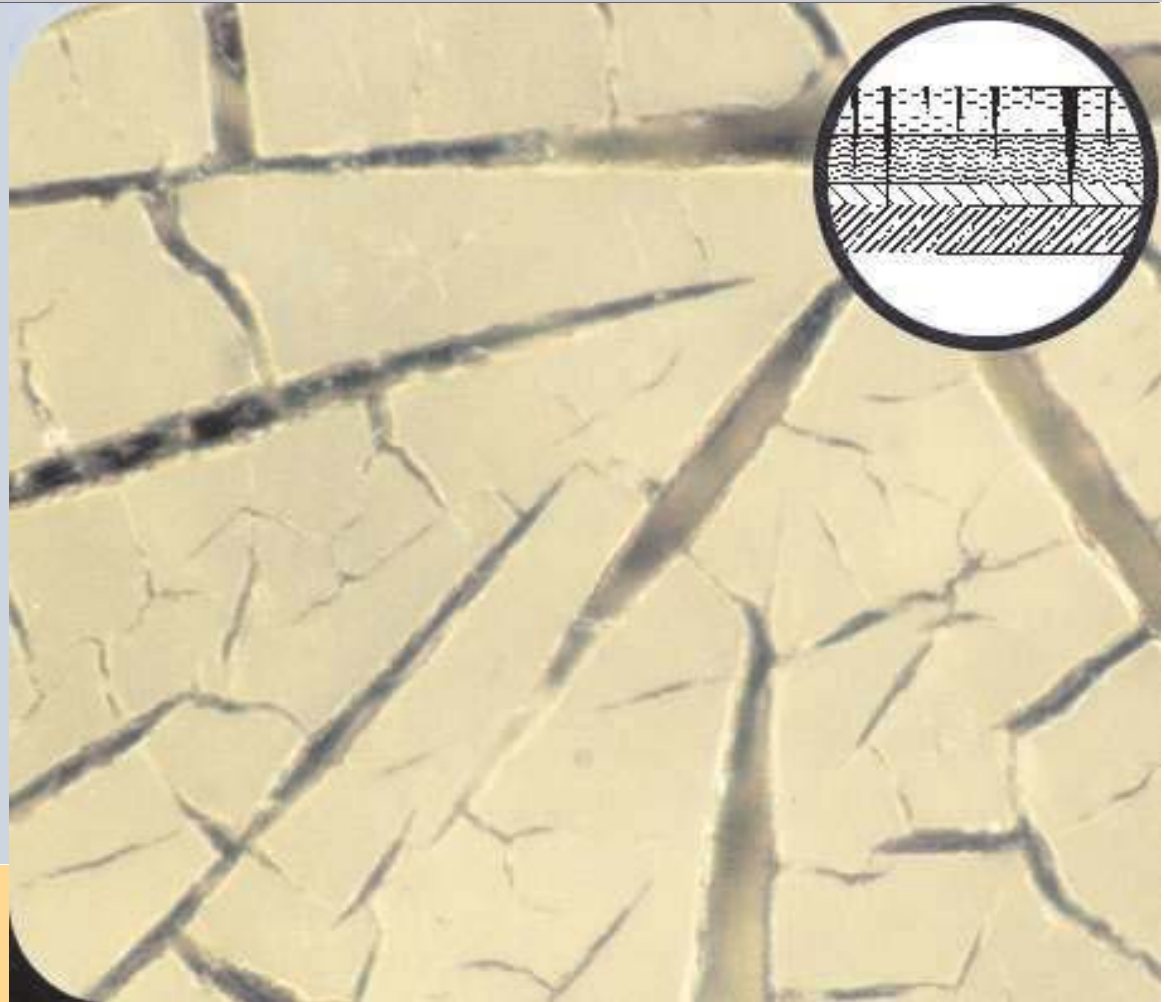
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Paint Defects Advice

Cracking, Crazeing

How to Repair

Sand down the paint film build back to a sound substrate. Ensure all traces of cracks are thoroughly removed. Refinish using suitable primers and top-coats.



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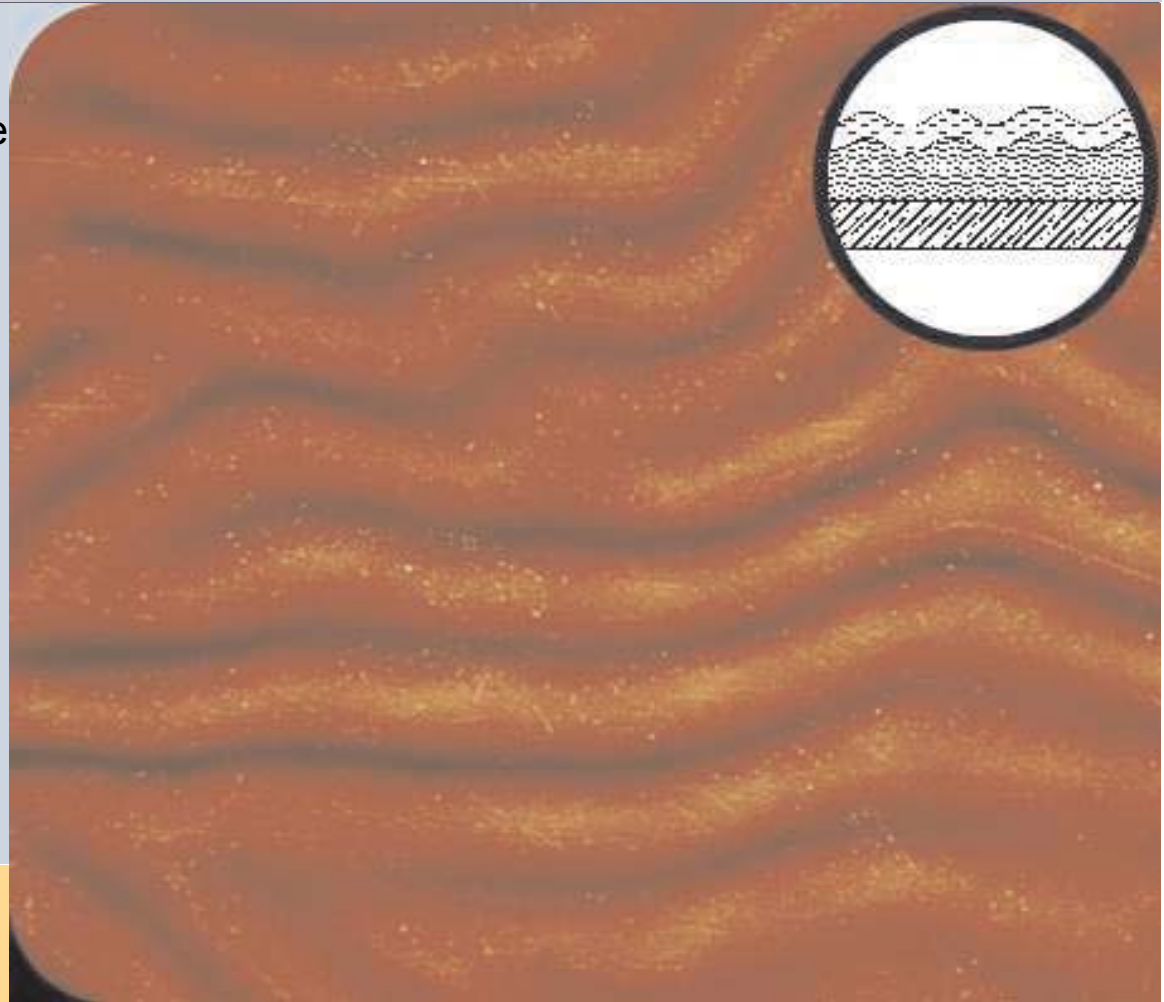
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Paint Defects Advice

Wrinkling

Definition

Textured paint surface with uneven wave type formation that occurs when the paint surface dries faster than the substrate coats. This problem only occurs in the presence of synthetic enamels.



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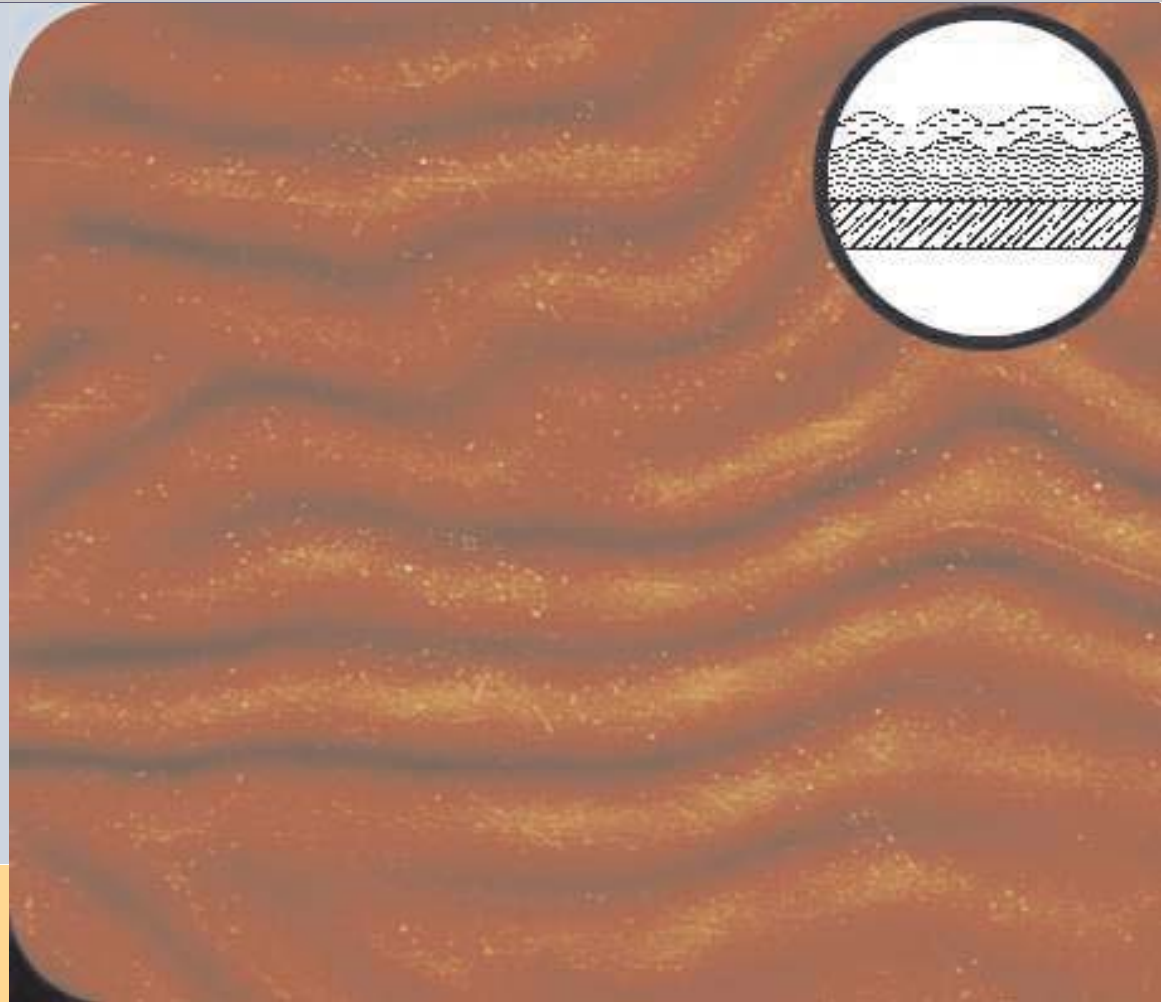
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Paint Defects Advice

Wrinkling

Causes

- 1] Synthetic Enamel applied too thick.
- 2] Little or no drier solution added.
- 3] Unfavourable drying conditions (e.g. shop temperature too high).



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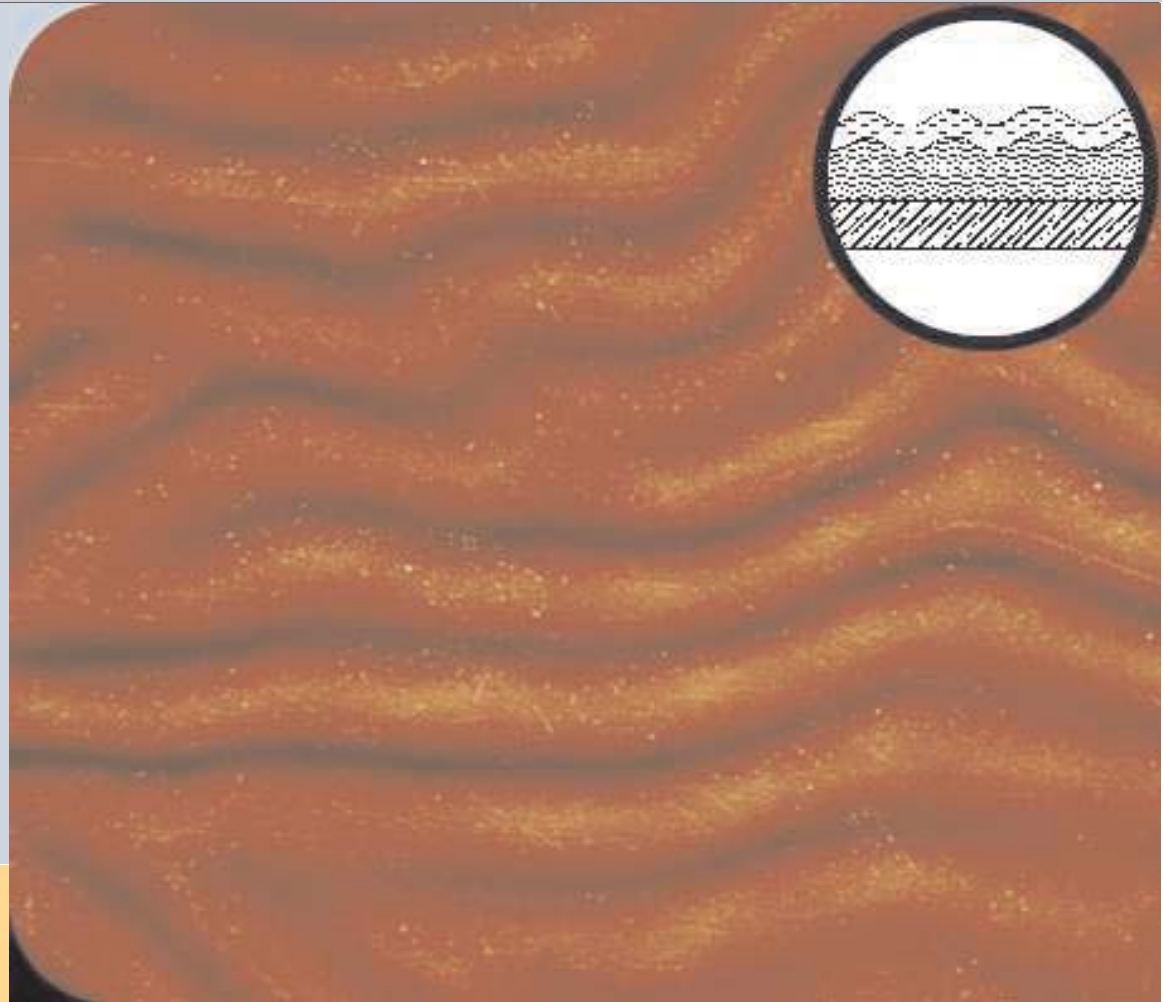
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Paint Defects Advice

Wrinkling

How to Prevent

- 1] Keep to recommended number of coats and film build.
- 2] Ensure drier solution is added as part of the mixing formulation.
- 3] Ensure correct drying conditions (not too warm).



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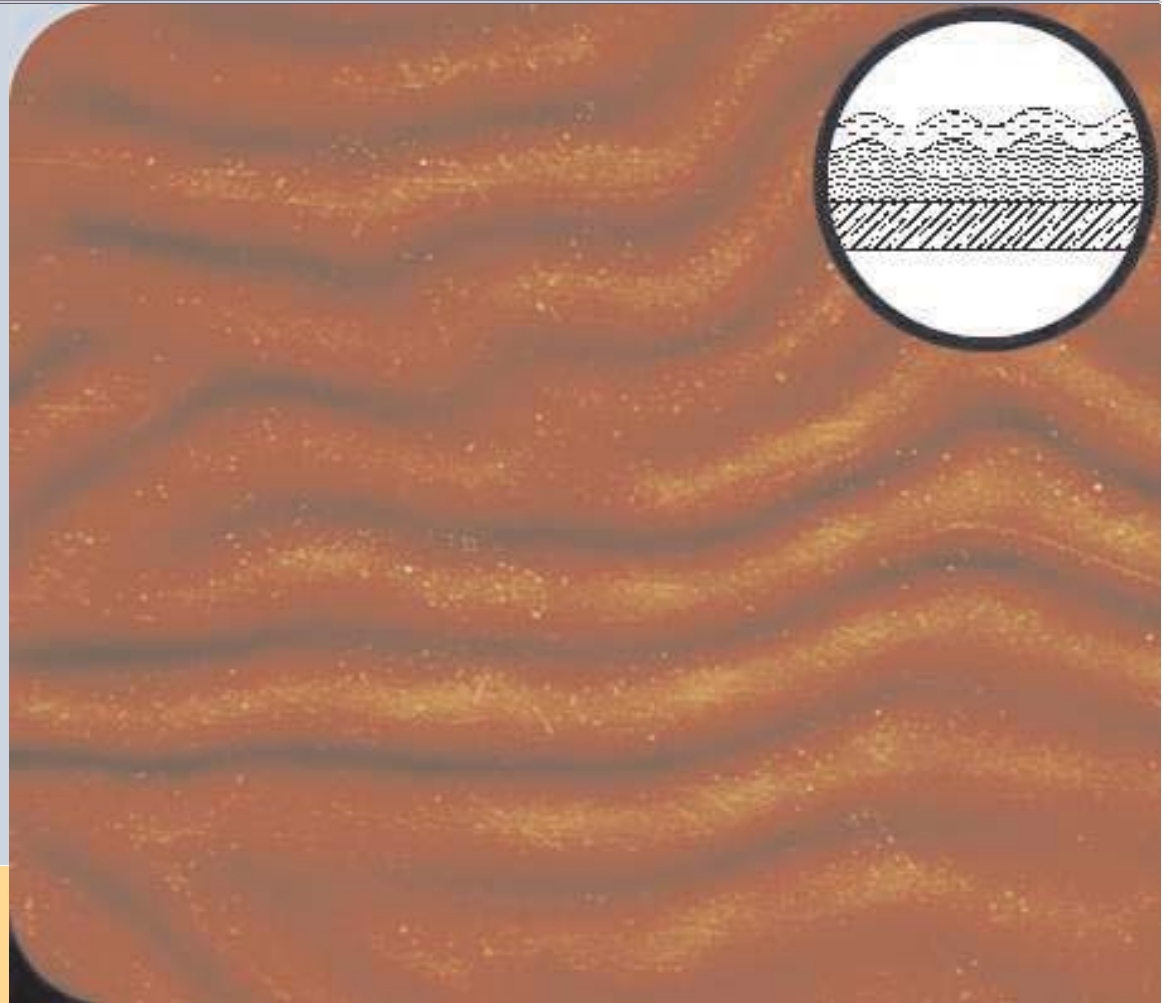
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Paint Defects Advice

Wrinkling

How to Repair

For minor faults, dry the surface thoroughly, sand back to a hardened layer and then refinish. For severe wrinkling faults, strip the entire paint layers with paint stripper or by mechanical bead blasting and refinish to specification.



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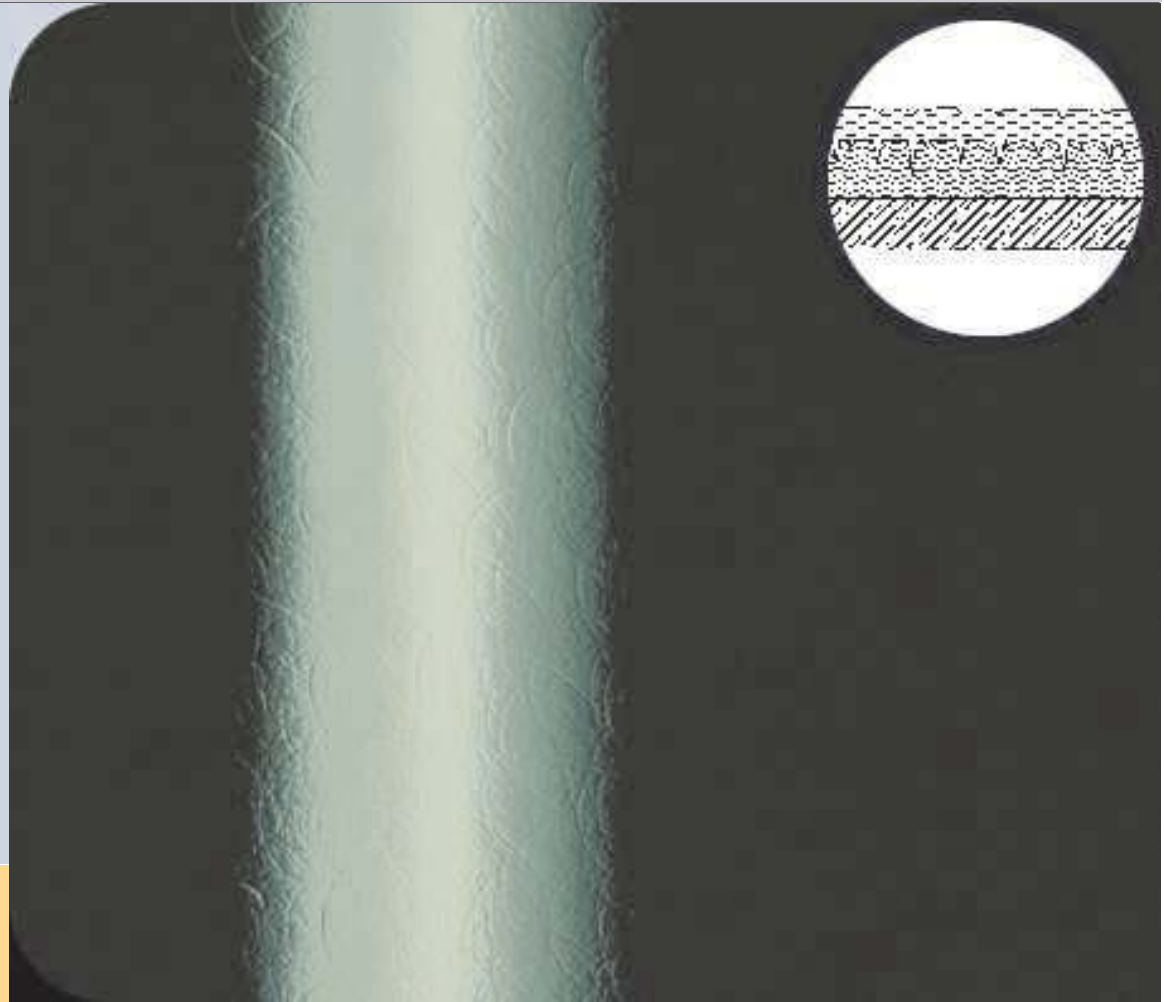
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Paint Defects Advice

Sanding Marks

Definition

Sanding swirl marks in the substrate show as lines in the top-coat.



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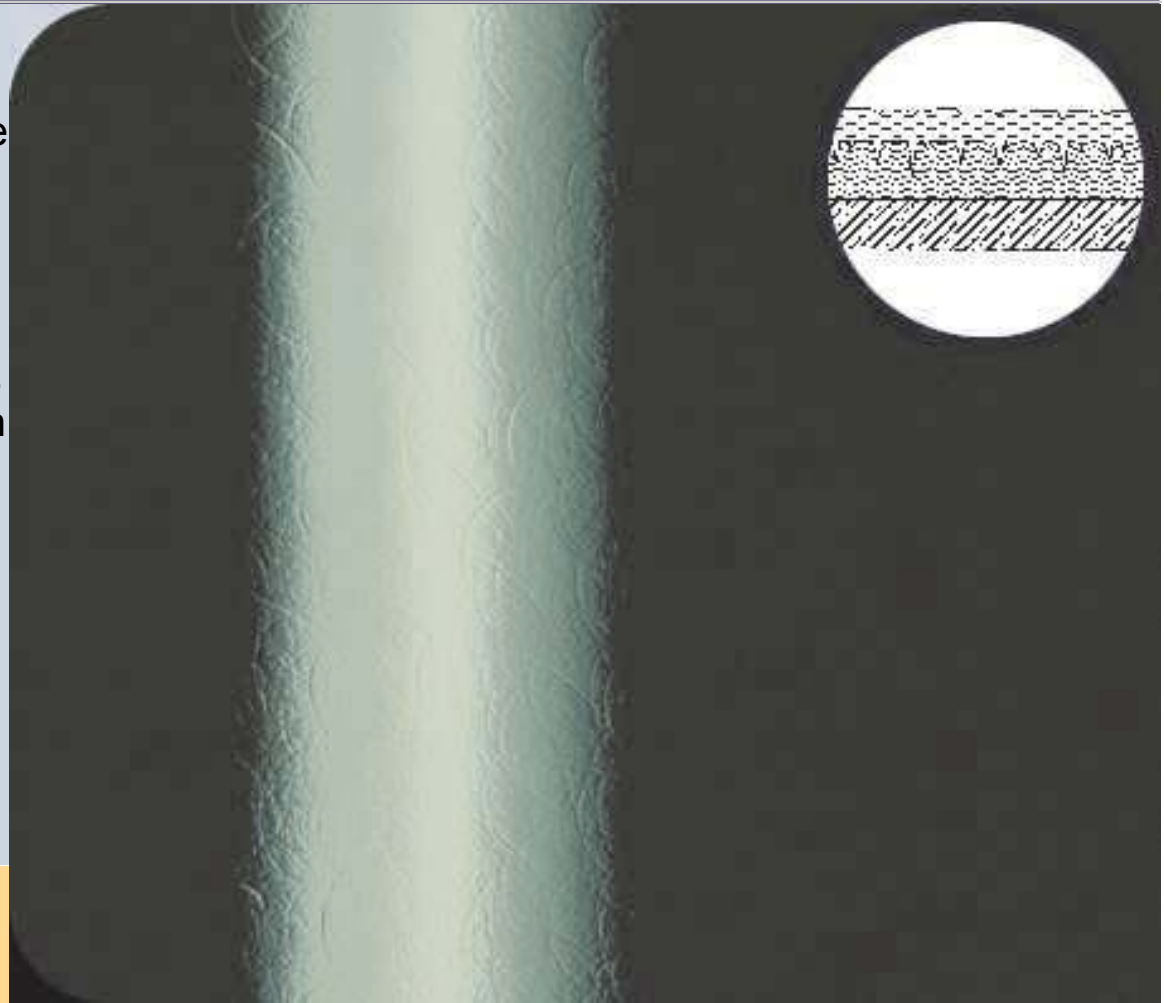
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Paint Defects Advice

Sanding Marks

Causes

- 1) The substrate was sanded with an abrasive that was too coarse. The depth of the scratch is too deep for the subsequent products to fill and hide.
- 2) The correct drying times for the primer or surfacer coats were not observed correctly. The swirl marks from the sanding operation are clearly visible due to the swelling of the primer at the time of painting and the shrinkage on drying.
- 3) Filler coats were applied too thin to cover the sanding marks in the substrate.
- 4) Poor sanding technique and/or sanding machine.



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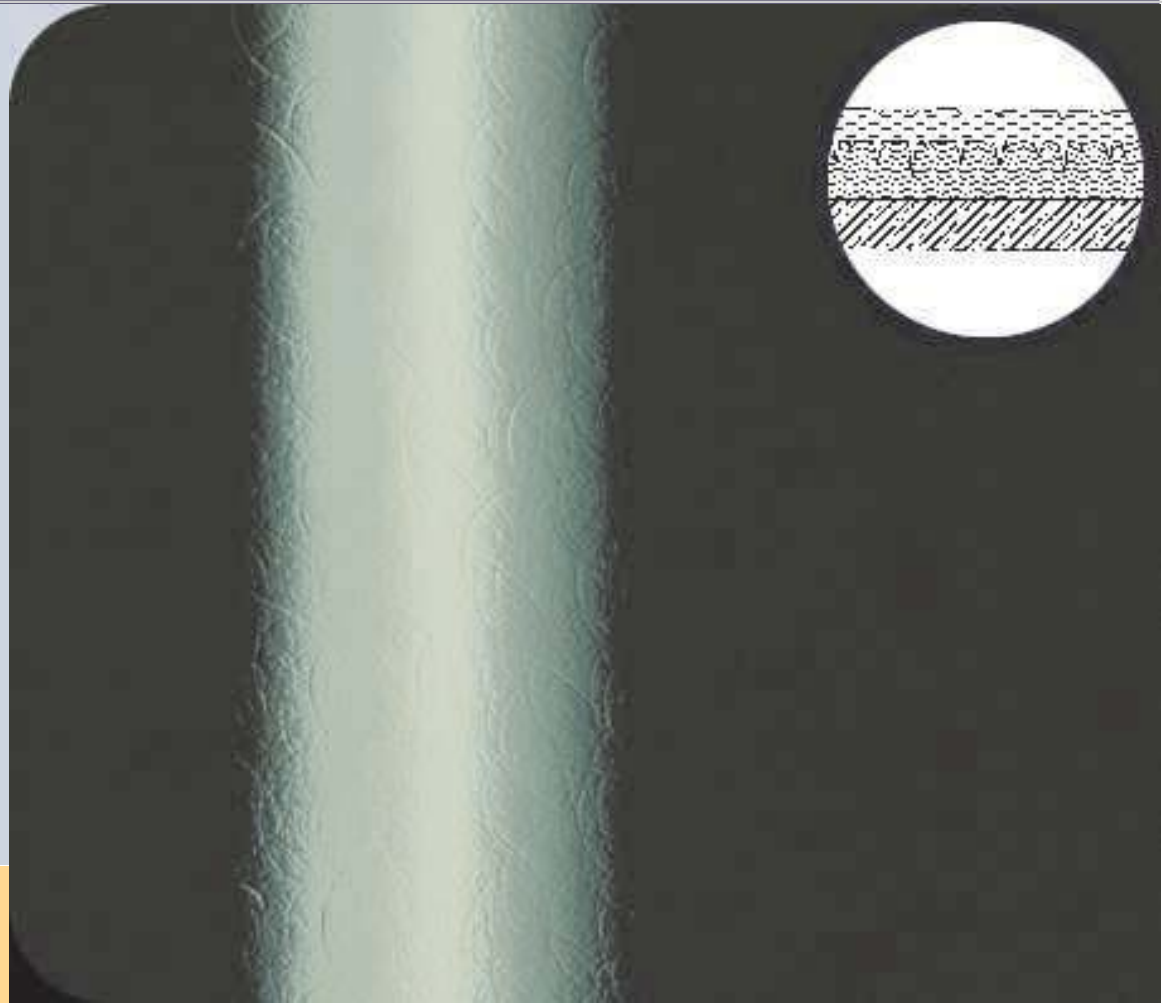
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Paint Defects Advice

Sanding Marks

How to Prevent

- 1] Use specified grade of sanding disc and/or paper (e.g. for stoppers use P80/P150, primer filler/filler P240 - refer to relevant tech data sheets).
- 2] Dry as per specification.
- 3] Observe specified film builds.
- 4] Always place sanding machine on surface of paintwork before starting the machine. For dry sanding of primer/filler coats, the eccentric stroke should not be greater than 5mm.



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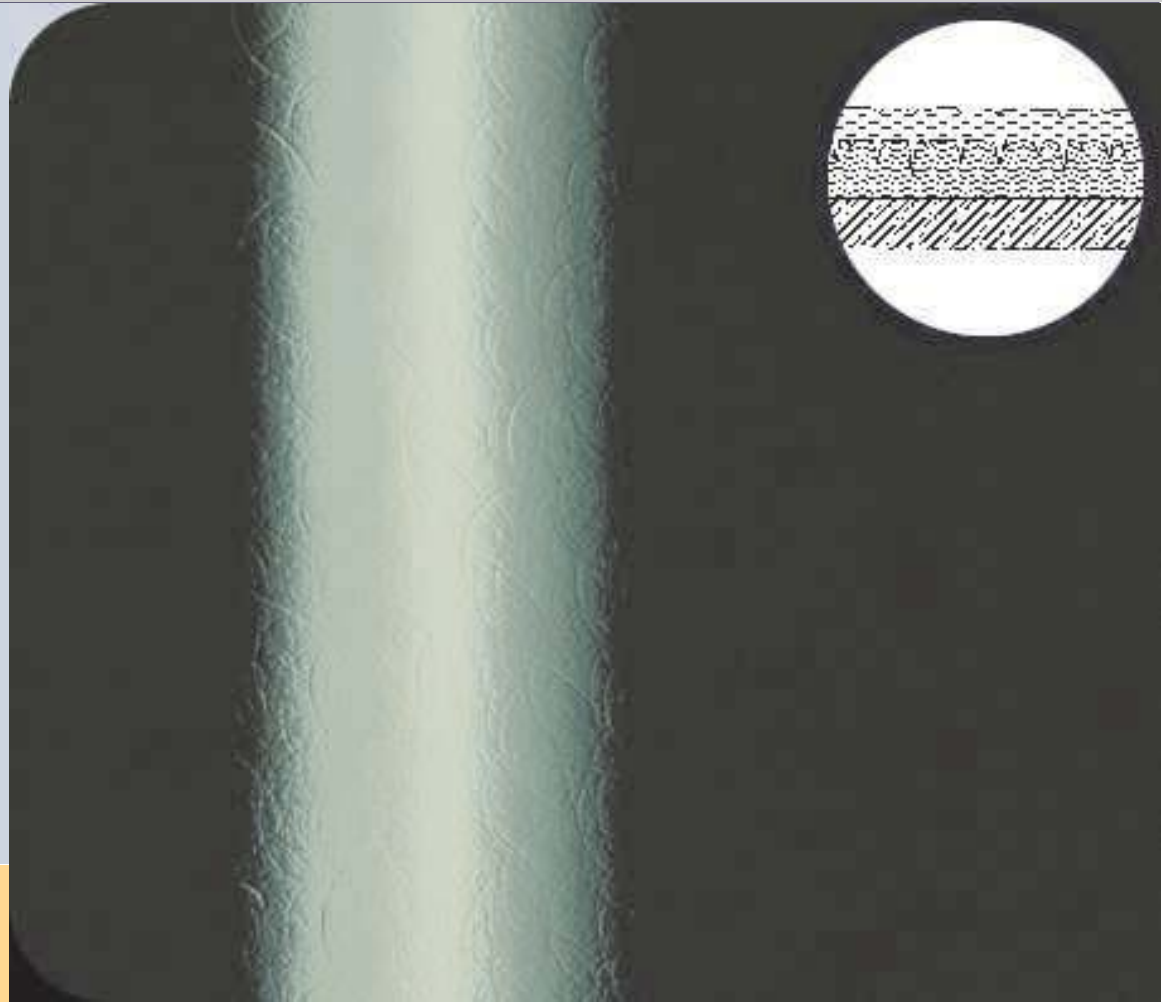
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Paint Defects Advice

Sanding Marks

How to Repair

Sand out the scratches and refinish with correct filler coat and/or top-coats as necessary.



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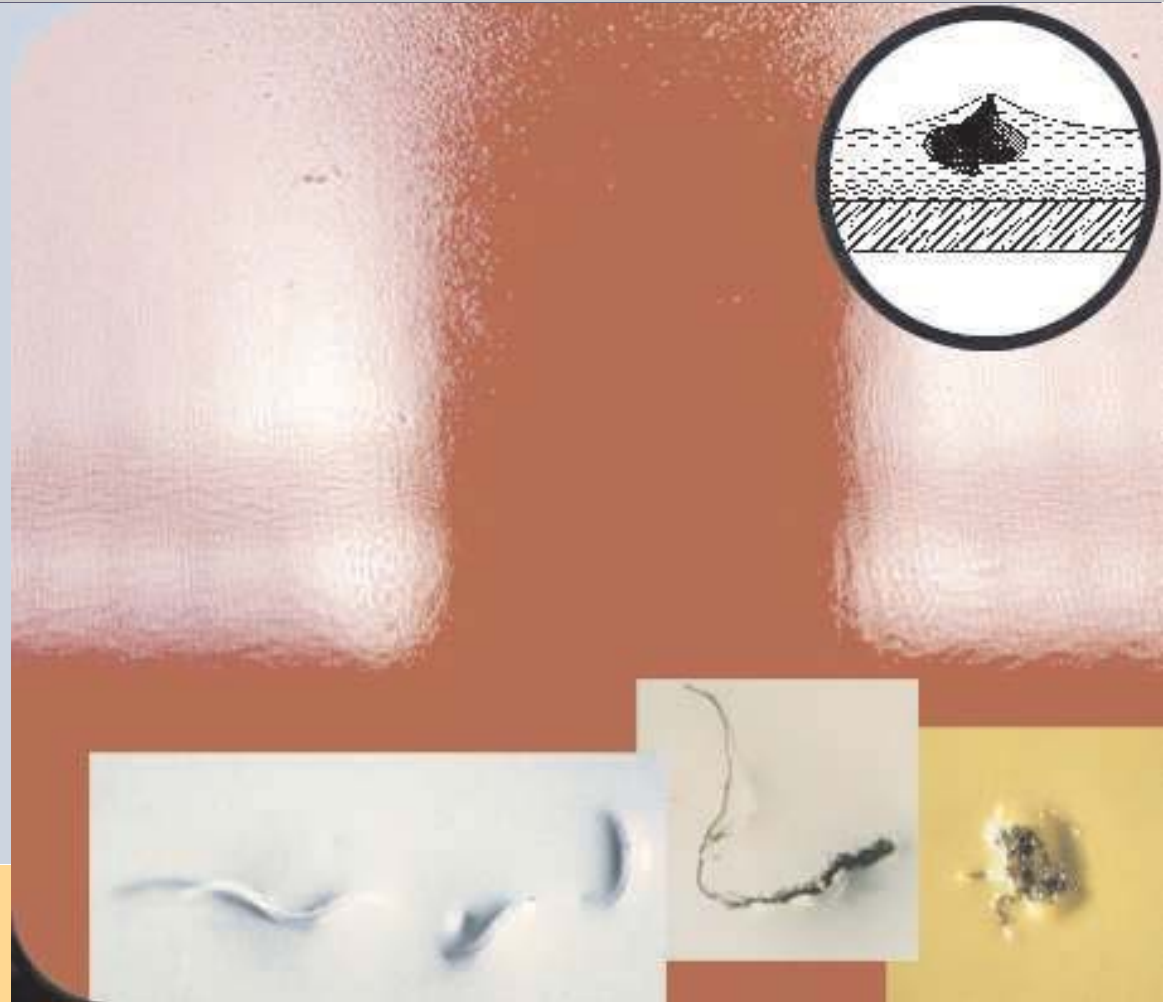
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Paint Defects Advice

Dust Contamination

Definition

Usually small, irregular particles in the paint film caused by foreign matter (e.g. dust/dirt) which can occur in different sizes, shapes, types and patterns.



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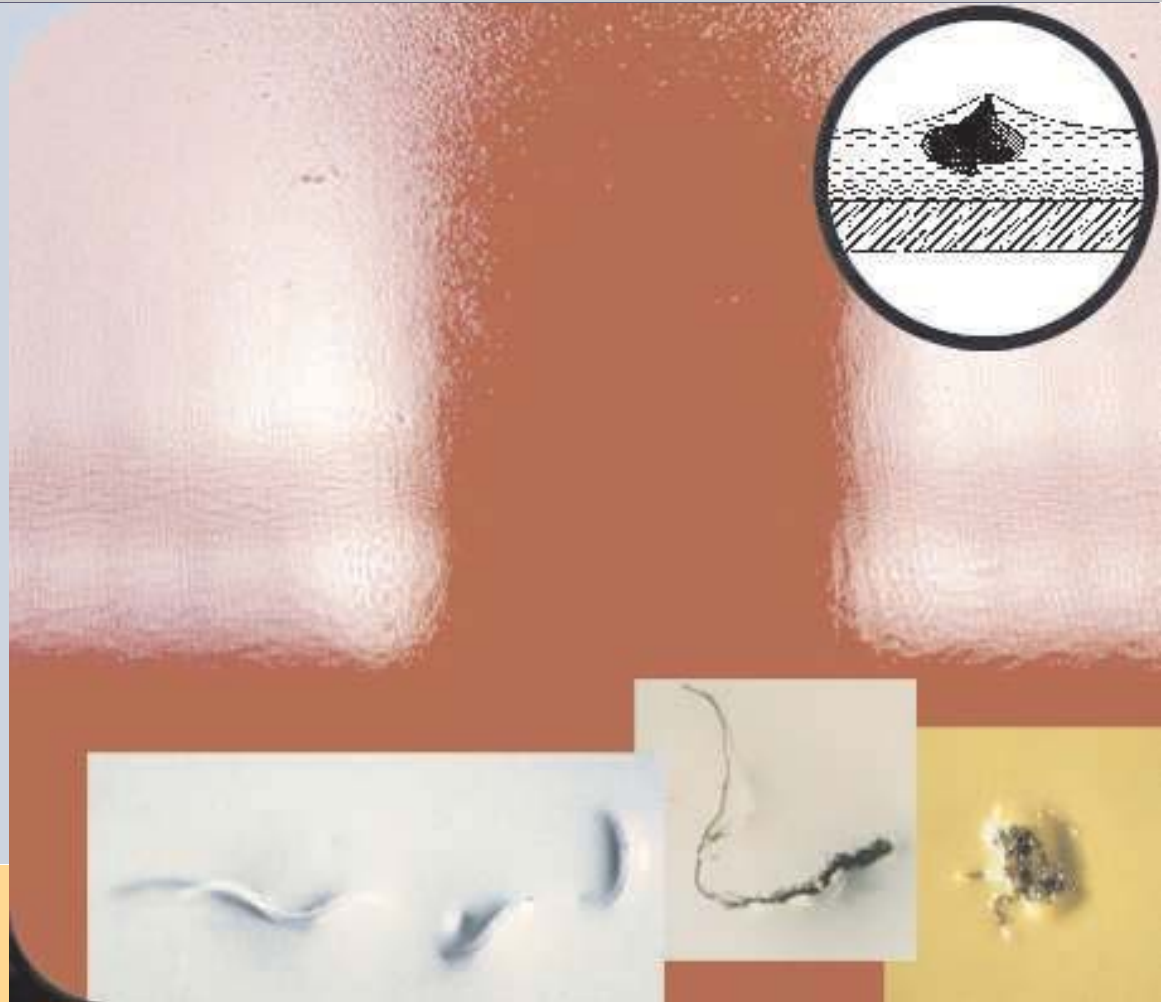
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Paint Defects Advice

Dust Contamination

Causes

- 1) Poor cleaning of substrate prior to painting.
- 2) Lint containing overalls or clothes.
- 3) Spray booth dust problem due to dirty filters causing incorrect air supply, extraction and pressure.
- 4) Intake of contaminated air from outside the spray booth (polishing residues, fine dust etc.).



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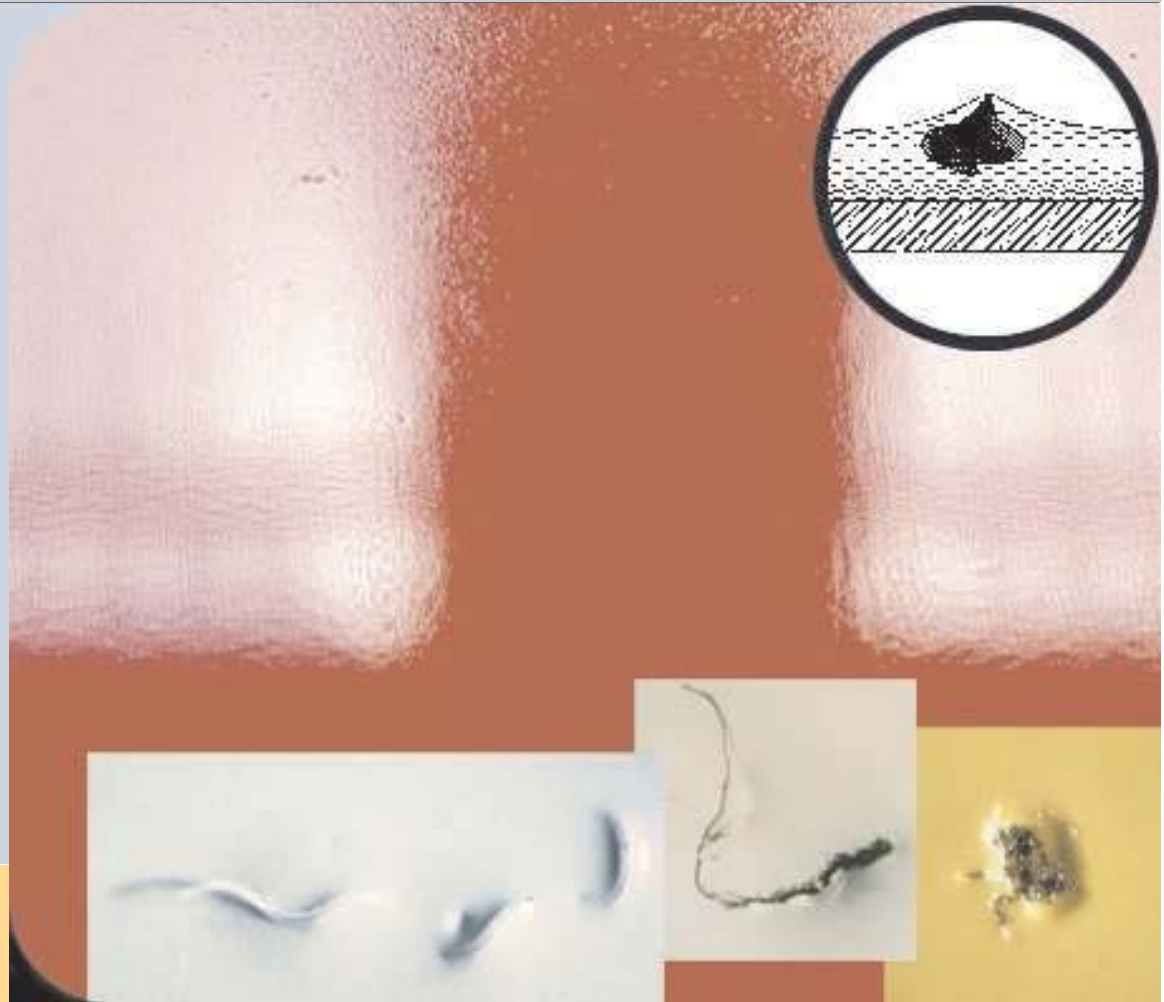
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Paint Defects Advice

Dust Contamination

How to Prevent

- 1) Thorough cleaning before application of new paints.
- 2) Use lint-free overalls and cloth.
- 3) Ensure regular maintenance and filter changes of the booth.
- 4) Ensure polishing/finishing areas are away from the paintshop and separated by filtered and ventilated systems.



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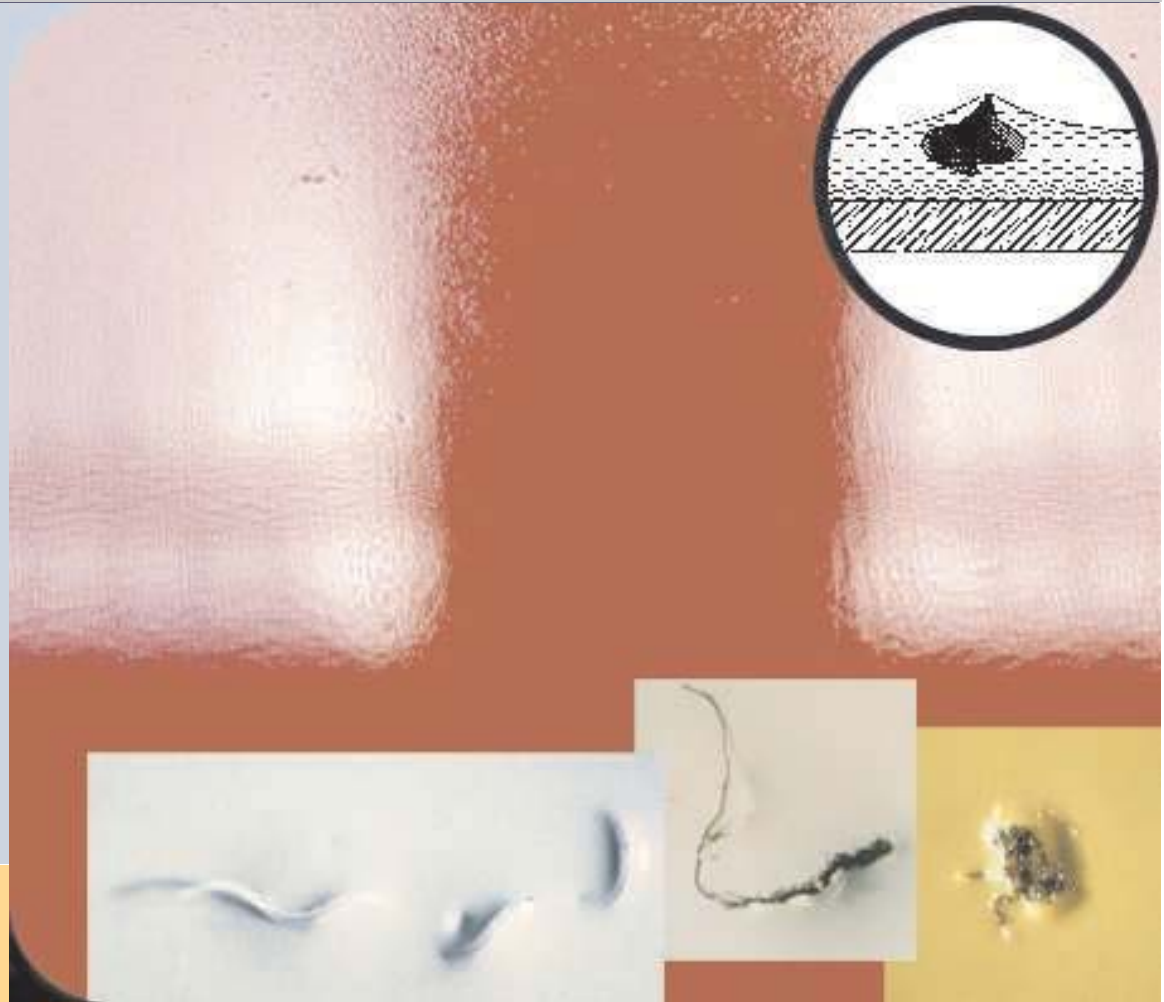
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Paint Defects Advice

Dust Contamination

How to Repair

For minor faults, polish with a fine polishing paste and finish with a high gloss polish. For severe faults, sand out the problem and repaint.



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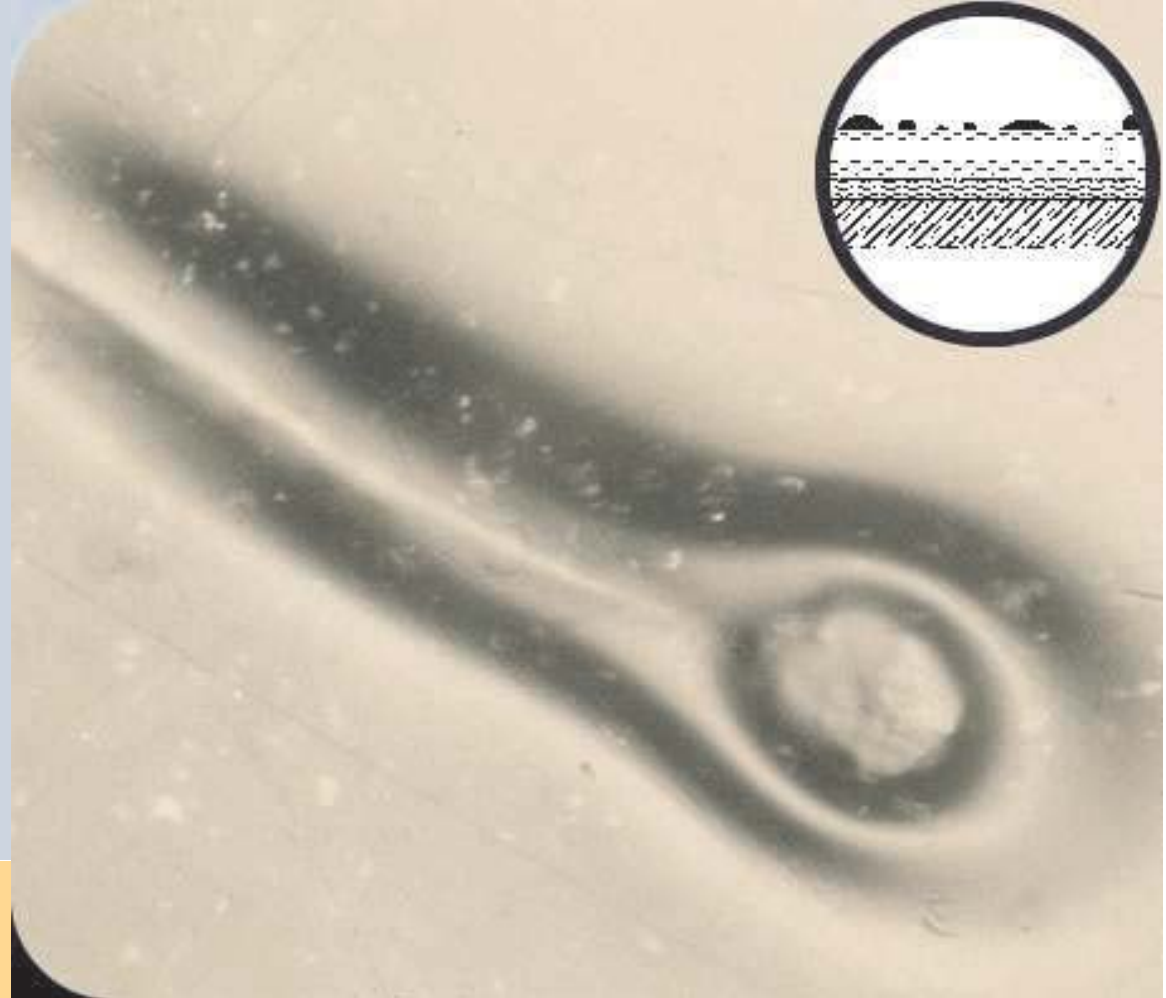
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Paint Defects Advice

Spraydust/Overspray

Definition

Fine dry atomised spray droplets from the painting process stuck to the surface, or droplets that have not been absorbed by the paint film.



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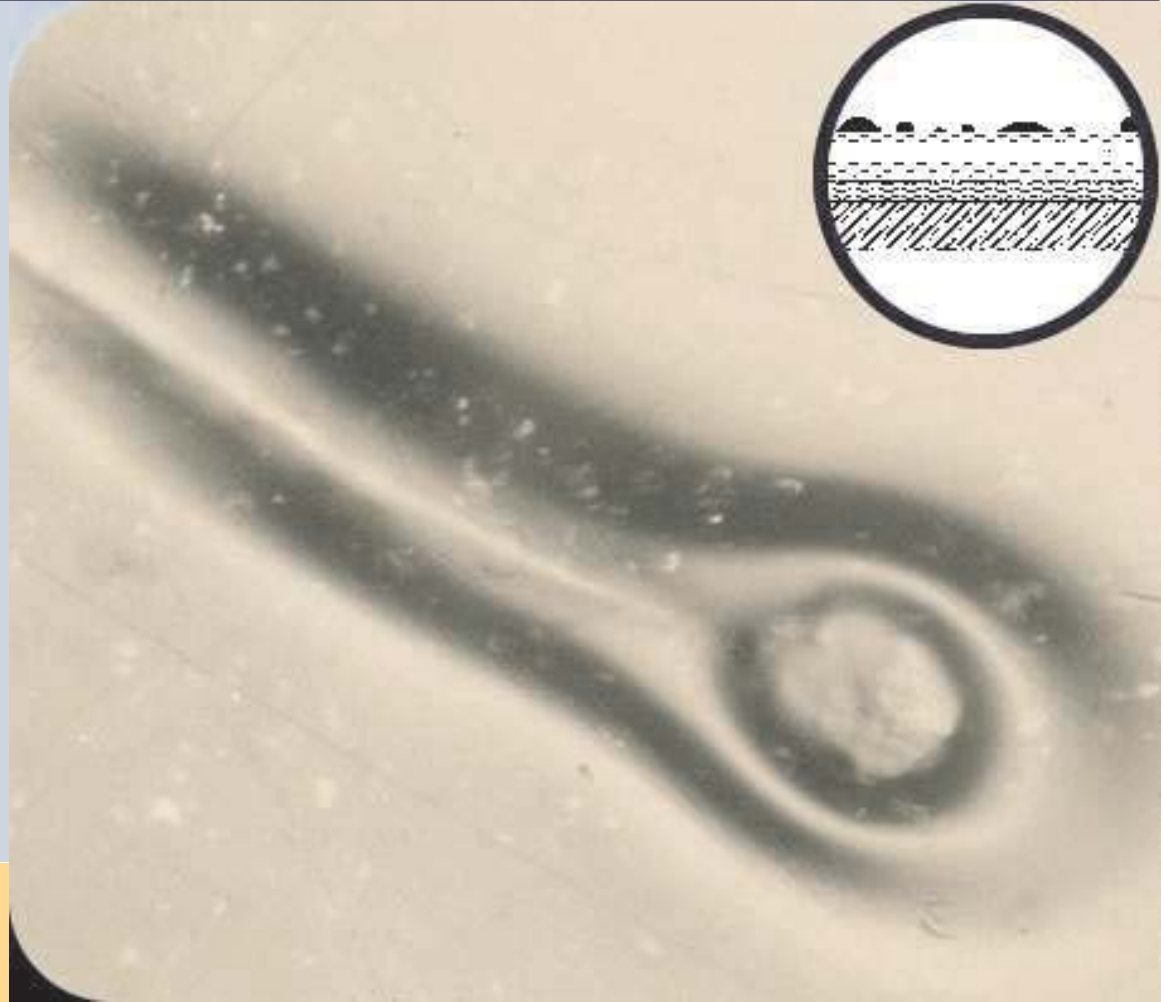
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Paint Defects Advice

Spraydust/Overspray

Causes

- 1] Poor spray absorption due to the incorrect hardener and/or thinner for the painting conditions or the size of the object which is being sprayed.
- 2] Inadequate overlap of spray pattern when spraying.



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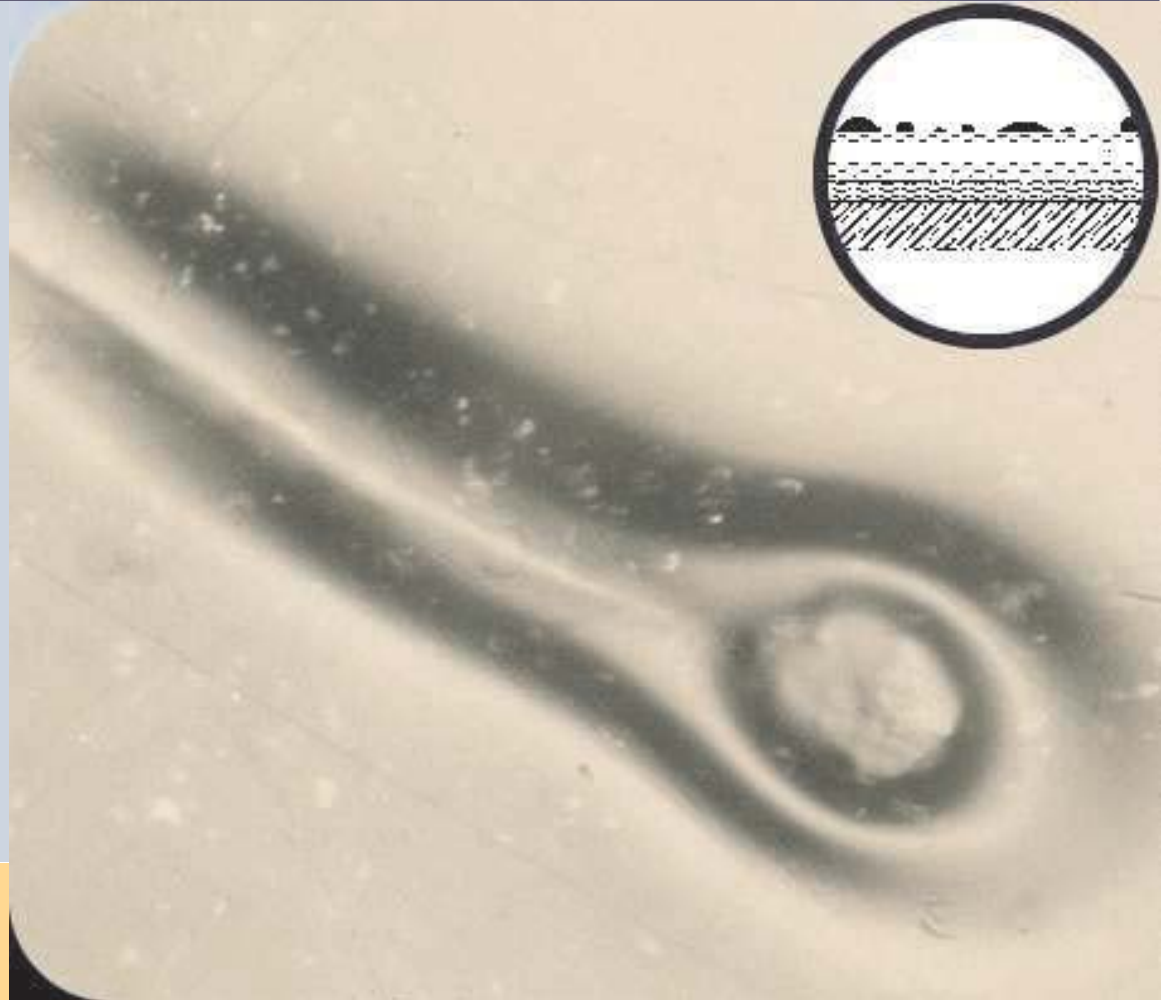
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Paint Defects Advice

Spraydust/Overspray

How to Prevent

- 1] Select the correct choice of hardener and thinner to suit the temperature of the workshop and the size of the object/vehicle which is to be painted.
- 2] Ensure adequate overlap of previous gun strokes when spraying.



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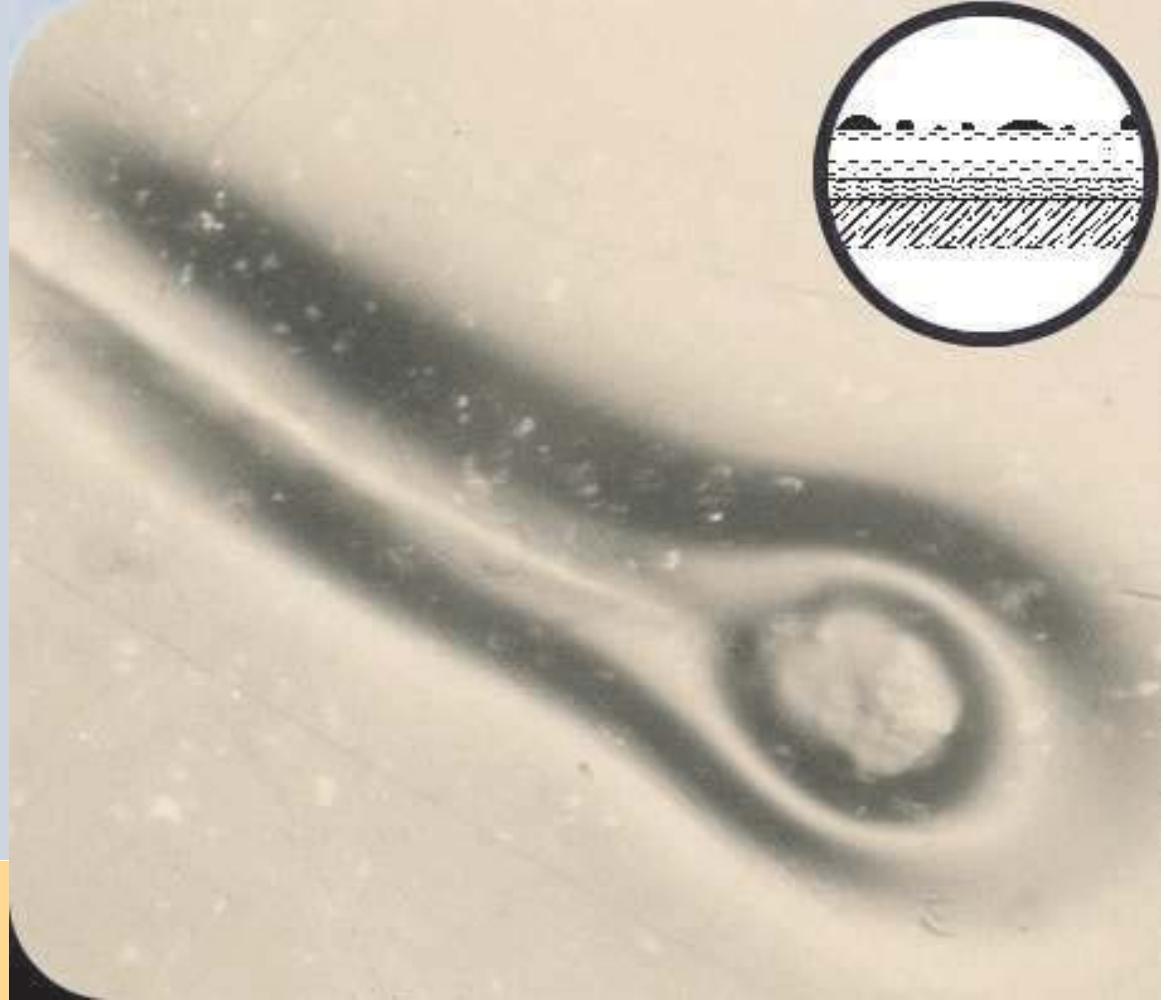
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Paint Defects Advice

Spraydust/Overspray

How to Repair

Polish out with a fine polishing paste and a high gloss polish.



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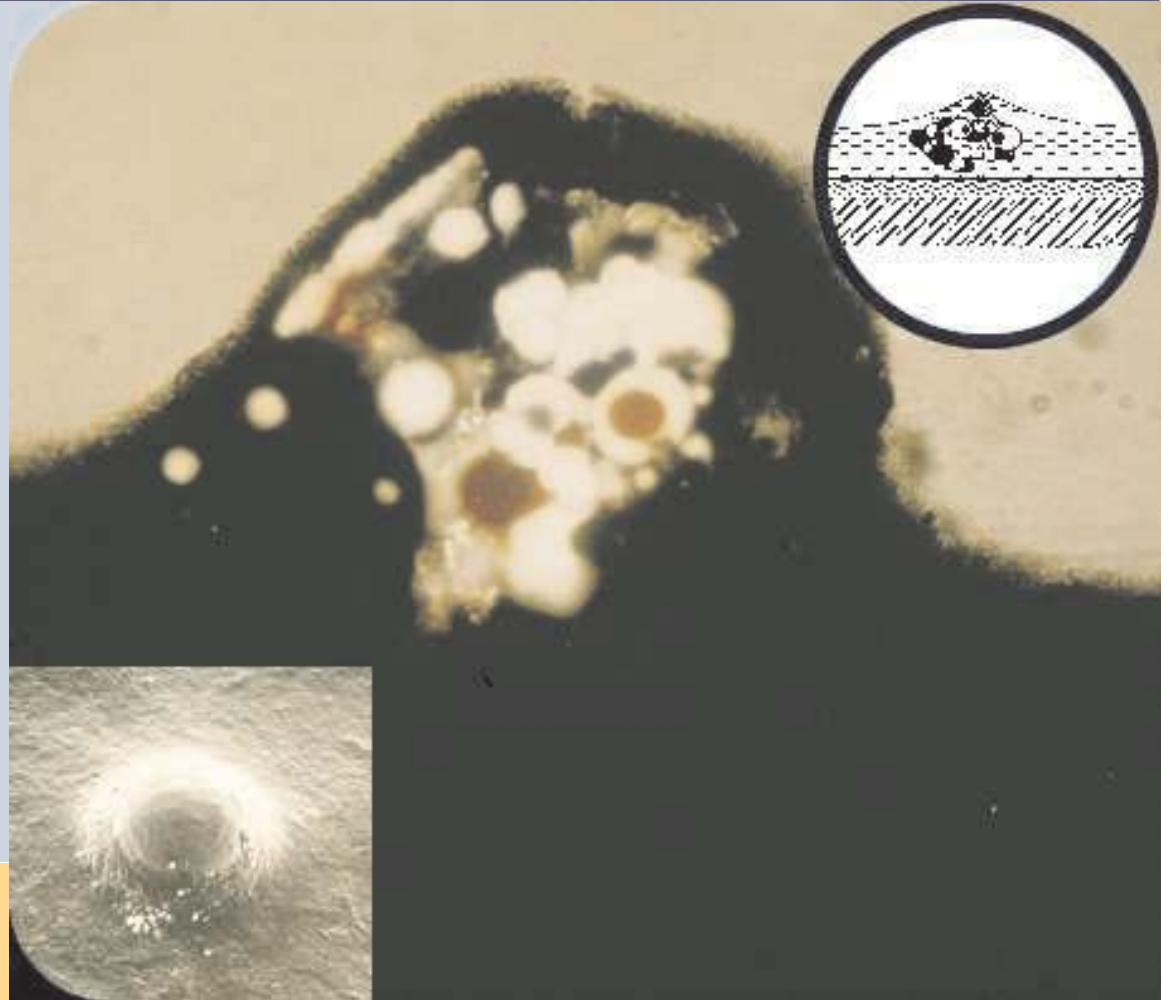
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Paint Defects Advice

Spraydust Clusters

Definition

Paint dust particles from the spray environment in the new paint surface.



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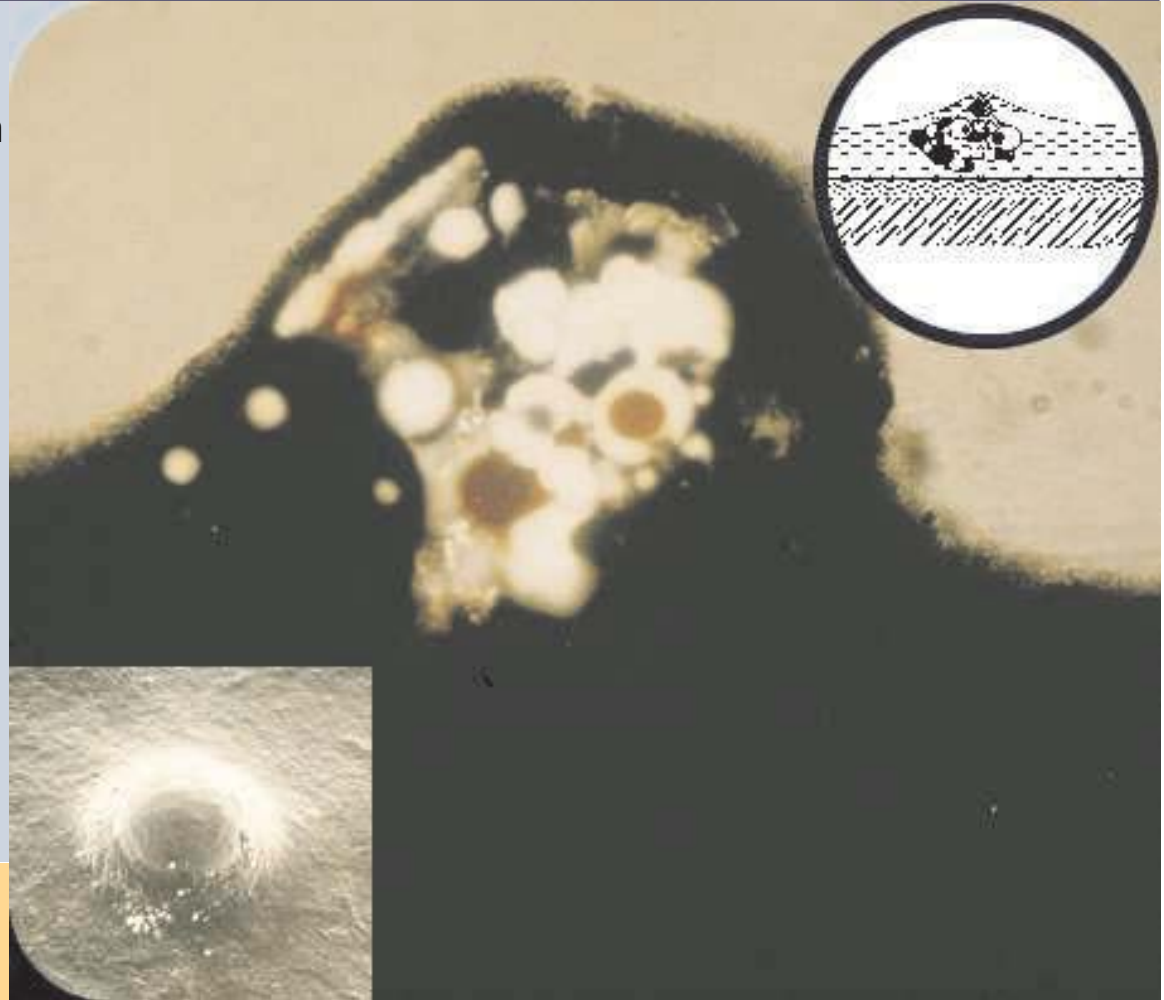
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Paint Defects Advice

Spraydust Clusters

Causes

- 1] Impurities due to paint residue/encrustation of the spray gun, paint hoses and clothing.
- 2] Paint clusters (multi-coloured particles) from the spray booth fall into the wet paintwork. These particles often form on the roof of the spray booth if the air changes are poor or the filters are dirty.
- 3] Paint spray contamination from adjacent paint jobs.



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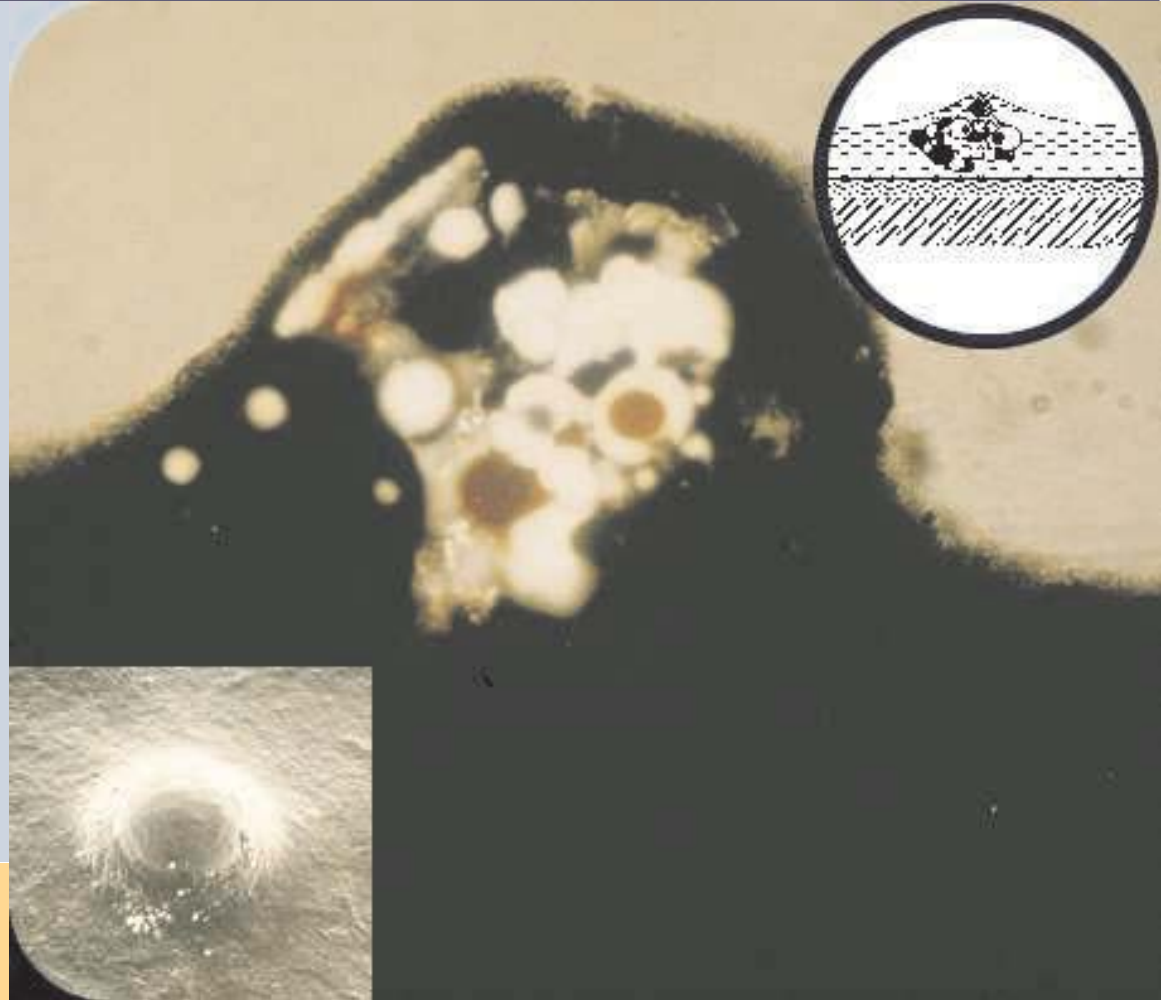
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Paint Defects Advice

Spraydust Clusters

How to Prevent

- 1] Regularly clean spray guns, air hoses and clothing.
- 2] Regular maintenance of the spray booth and filter systems and ensure the booth manufacturers set the airflow correctly.
- 3] Keep jobs separate and masked from adjacent jobs..



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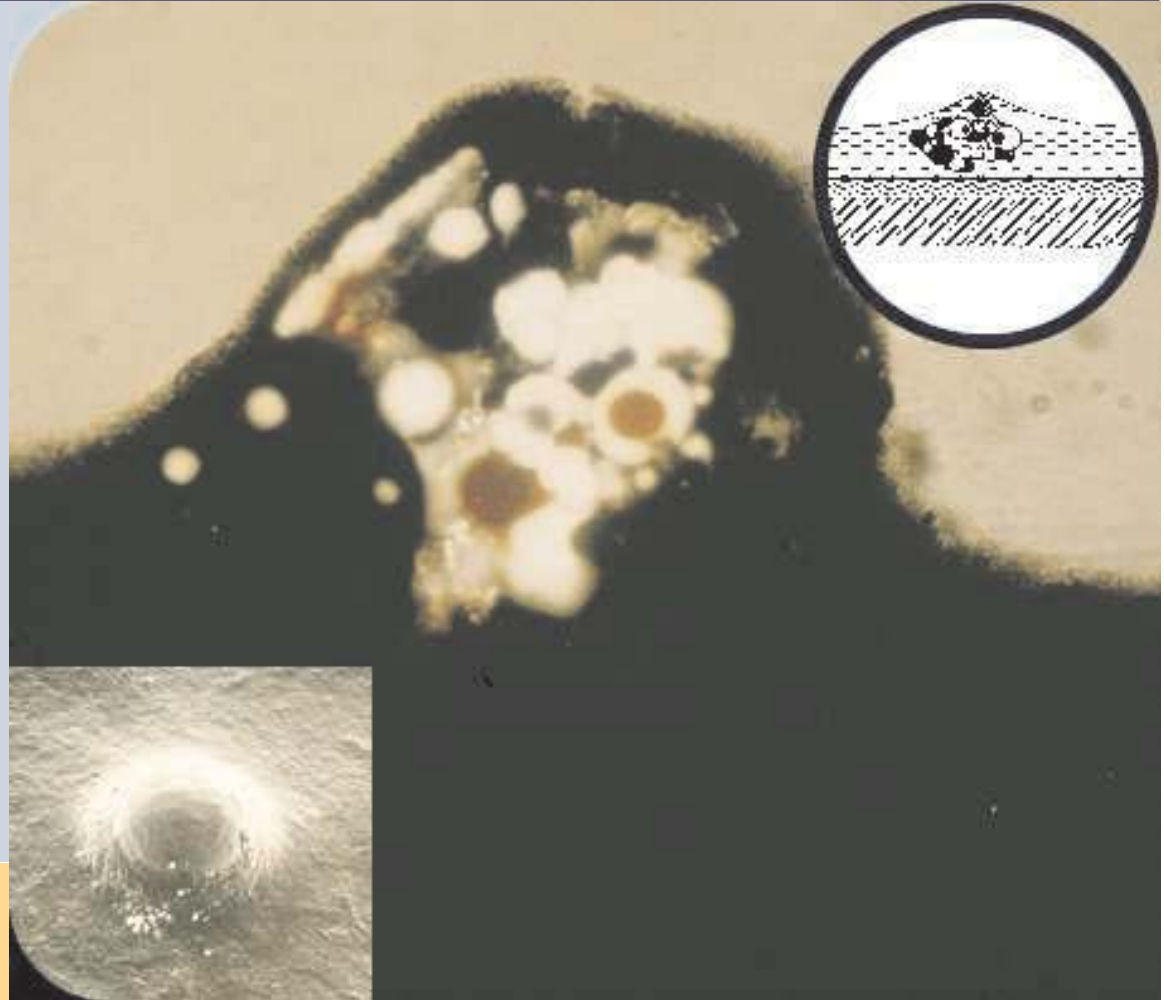
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Paint Defects Advice

Spraydust Clusters

How to Repair

Minor faults may be rectified by polishing with a fine polishing paste, and finishing with a high gloss polish. Severe faults will require sanding back and repainting.



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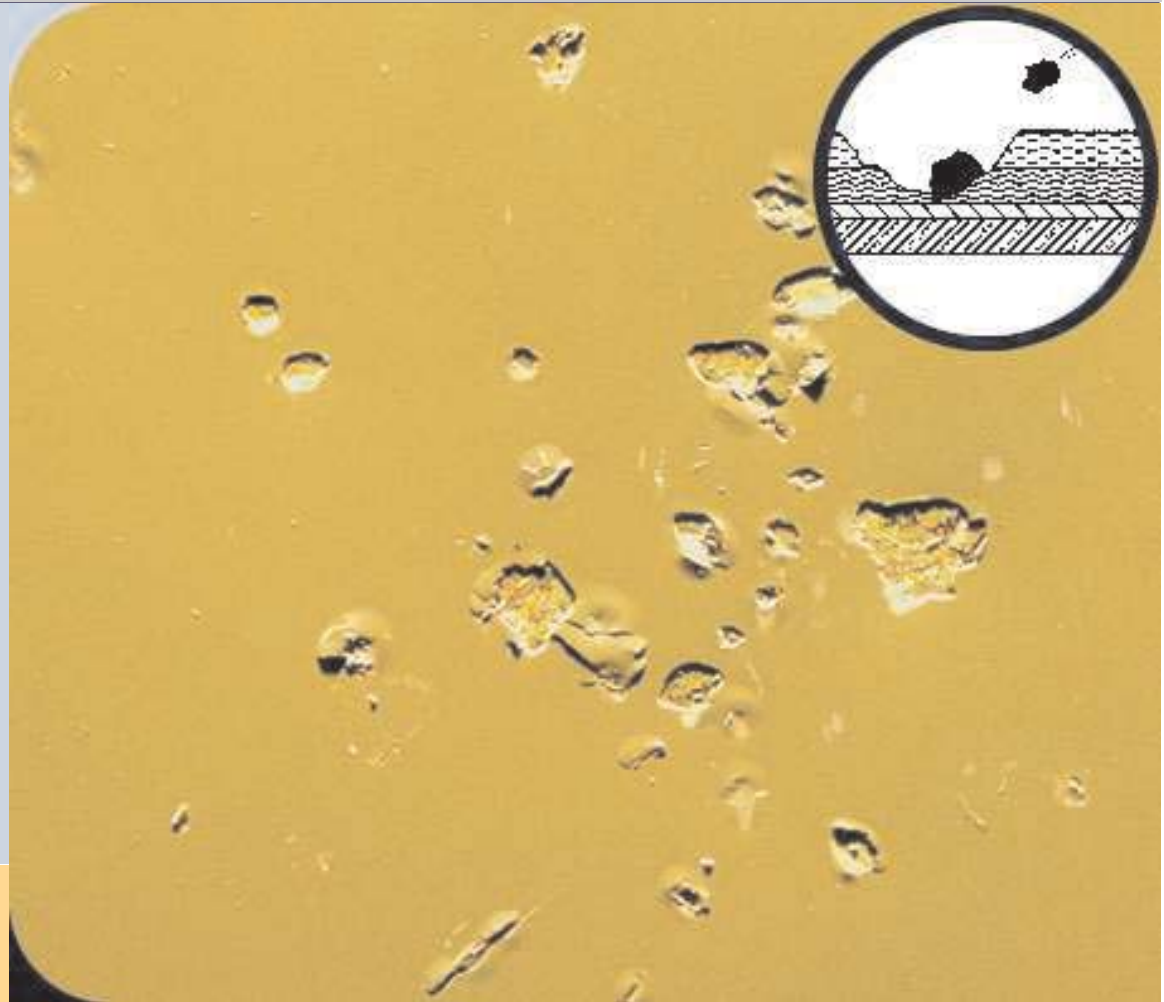
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Paint Defects Advice

Stone Chips

Definition

Mechanical damage to the paint surface and film build due to flying stones (e.g. chippings, stones and debris).



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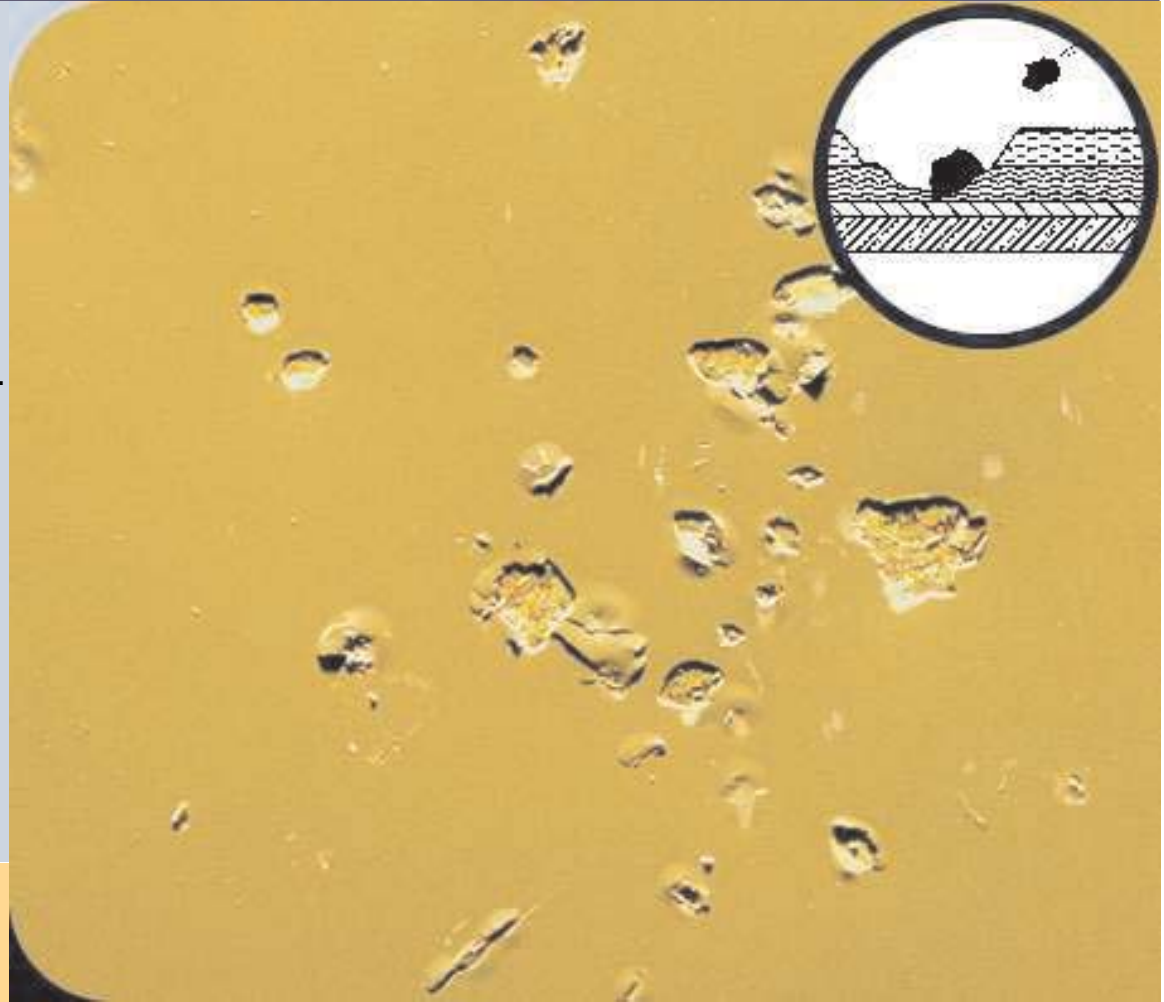
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Paint Defects Advice

Stone Chips

Causes

Stones of various weight, shape and size are flung onto the paintwork at varying levels of energy (velocity and size). Depending on the impact force, the top-coats and also the primer/surfacer coats can be damaged down to the substrate (metal, plastic or electrocoat). Moisture may then penetrate the paint film and further flaking can occur.



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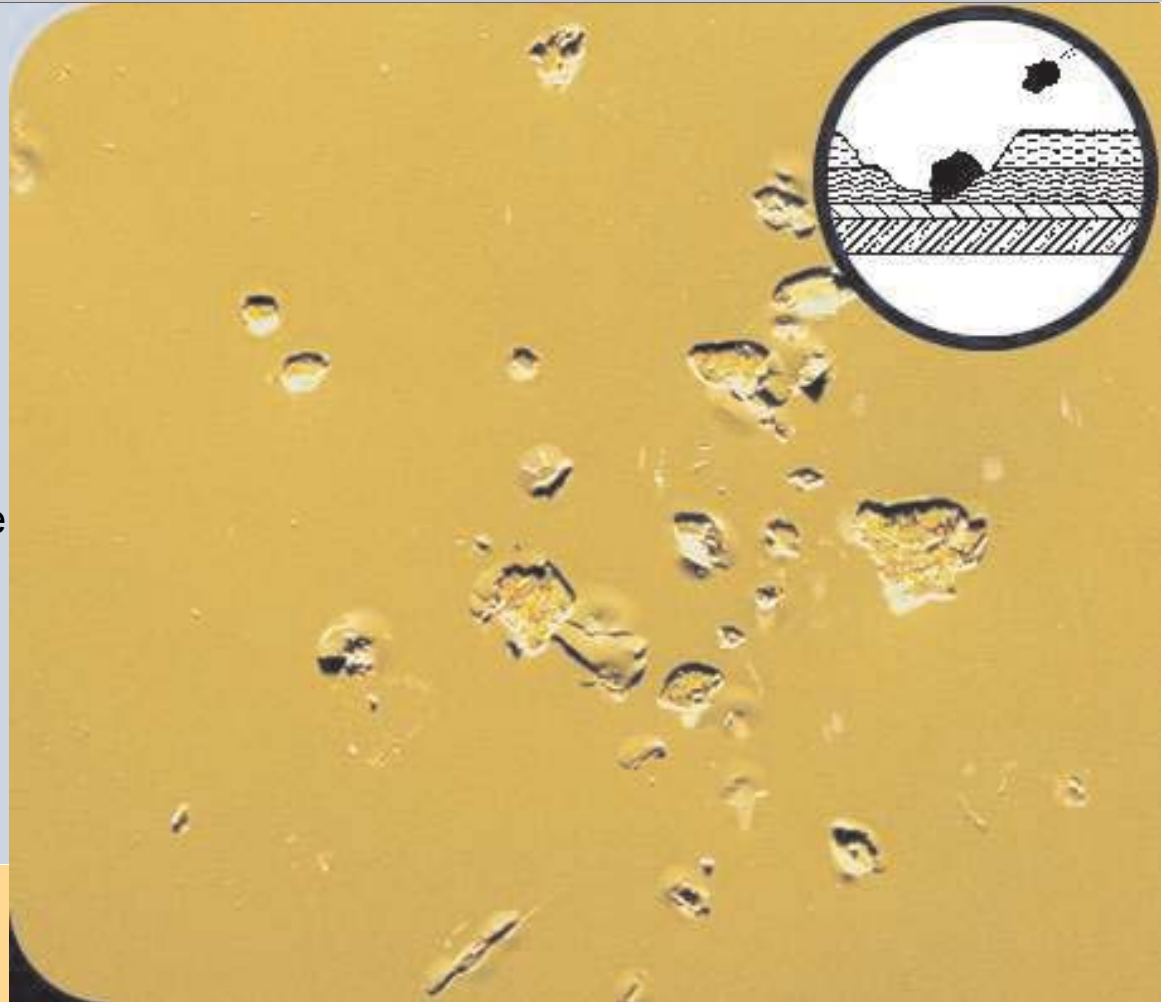
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Paint Defects Advice

Stone Chips

How to Prevent

There is no total protection against stone chips. Areas most greatly at risk can be given treatment of additional anti-chip and underbody protection coatings for extra protection to avoid corrosion of the substrate. (e.g. appropriate primer and/or the use of a soft face additive in the top-coats or clear lacquer to increase the flexibility). (4 parts by vol paint or clear to 1 part additive before adding the hardener and thinner).



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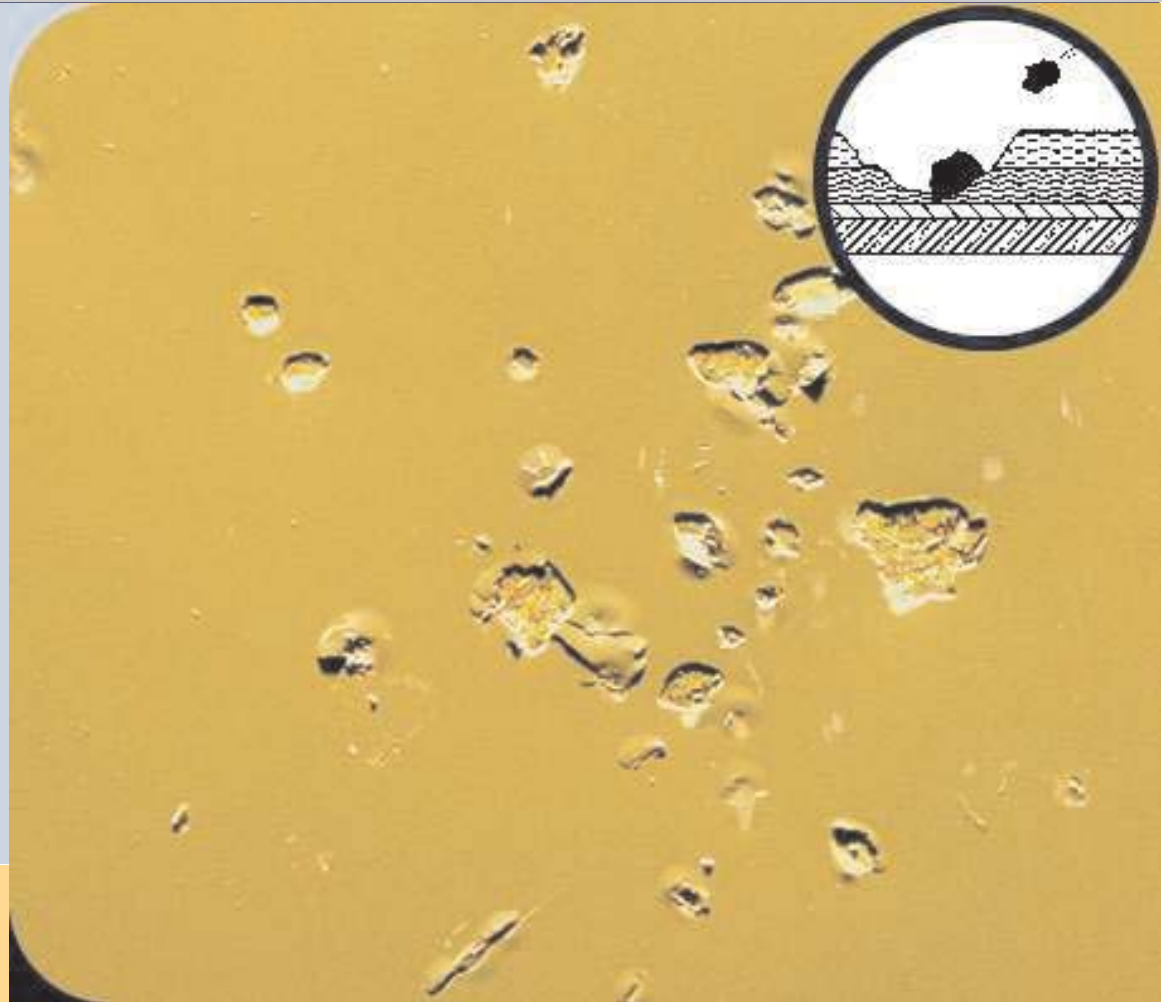
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Paint Defects Advice

Stone Chips

How to Repair

Stone chips should be touched-up immediately. Sand out and build up with the correct primer and/or top-coats.



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Paint Defects Advice

Corrosion, Rust

Definition

Paint damage showing at the paint surface as irregular shaped blisters. If the blisters burst then corrosion spots are clearly visible (e.g. brown rust on steel or white rust on aluminium).



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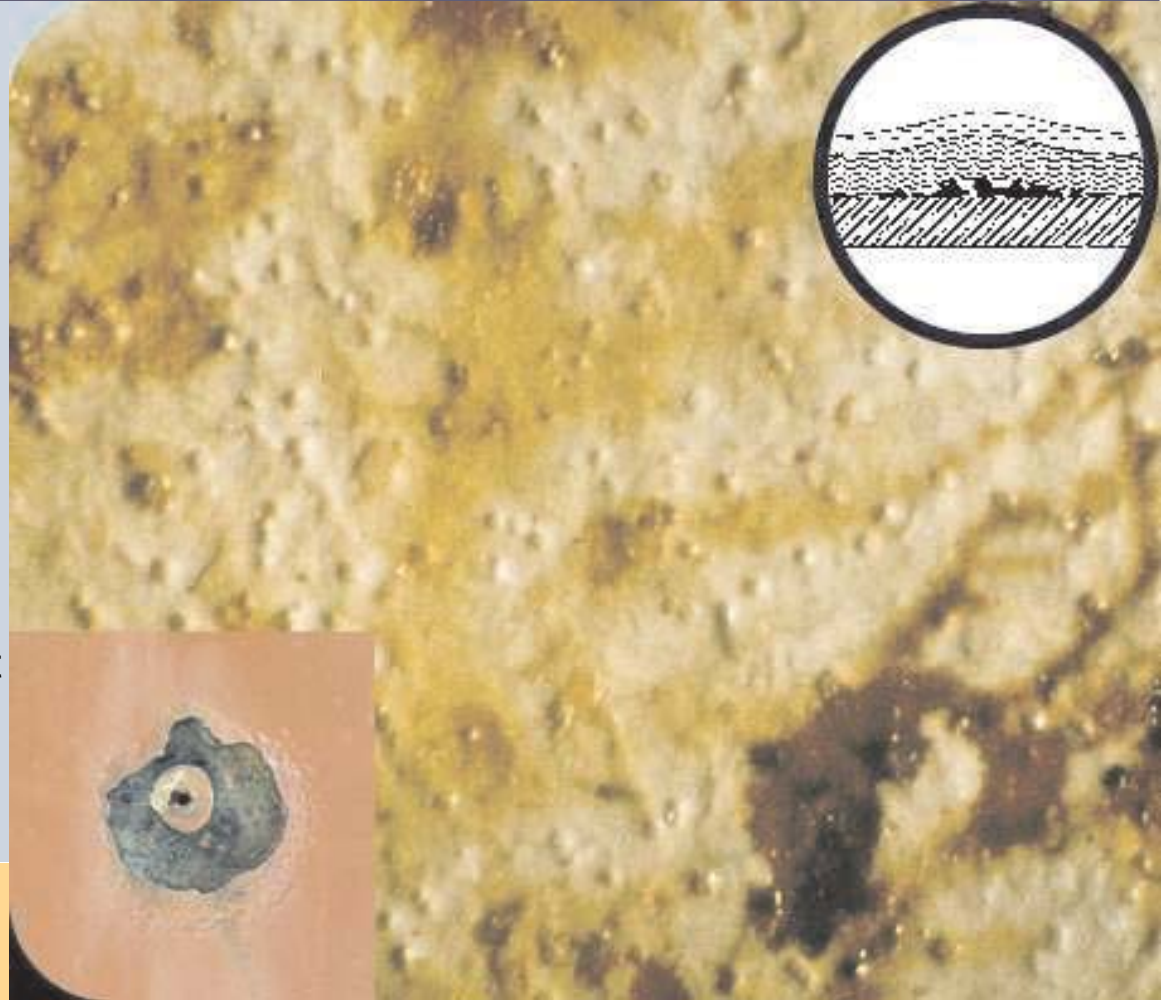
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Paint Defects Advice

Corrosion, Rust

Causes

- 1] Mechanical damage to the paint surface (e.g. stone chips, scratches etc.) causing penetration of moisture to the underlying coats or metal substrate.
- 2] Poor preparation of the metal prior to painting. Poor cleaning (see also chapter on "Blistering"). Poor rust removal or removal of metal particles from the metal surface.
- 3] Flash rust formation on newly stripped or sand blasted metal surfaces.
- 4] Inadequate or missing cavity sealing. (Rust through from behind).



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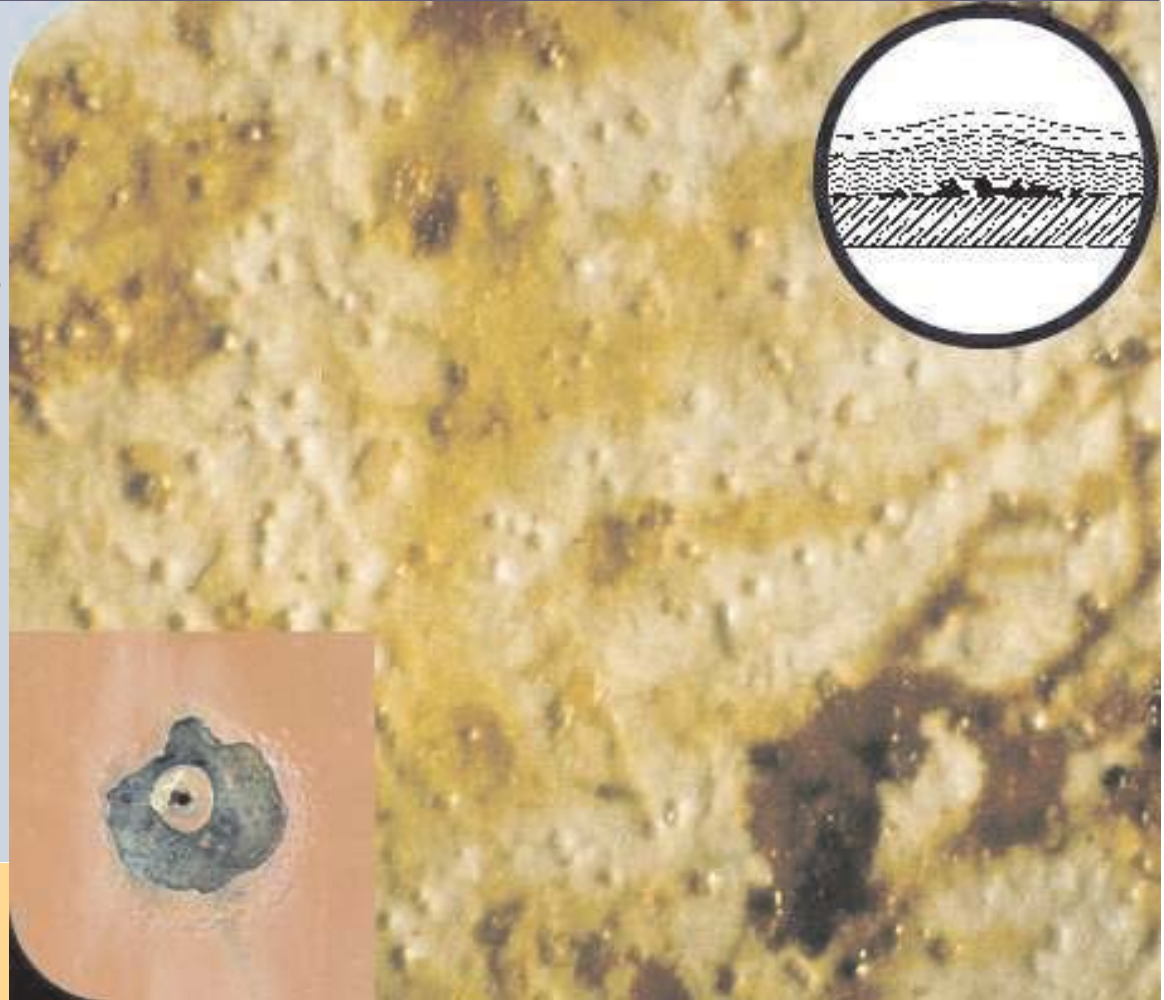
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Paint Defects Advice

Corrosion, Rust

How to Prevent

- 1) Stone chips or scratches should be repaired immediately..
- 2) Ensure thorough cleaning of all metal surfaces with an appropriate metal cleaner. Remove all rust by sand blasting to produce a bright metal substrate. Tin all welded seams
- 3) Sandblasted areas should be primed immediately after blasting to avoid flash rusting
- 4) Seal and protect all cavities with the recommended products.



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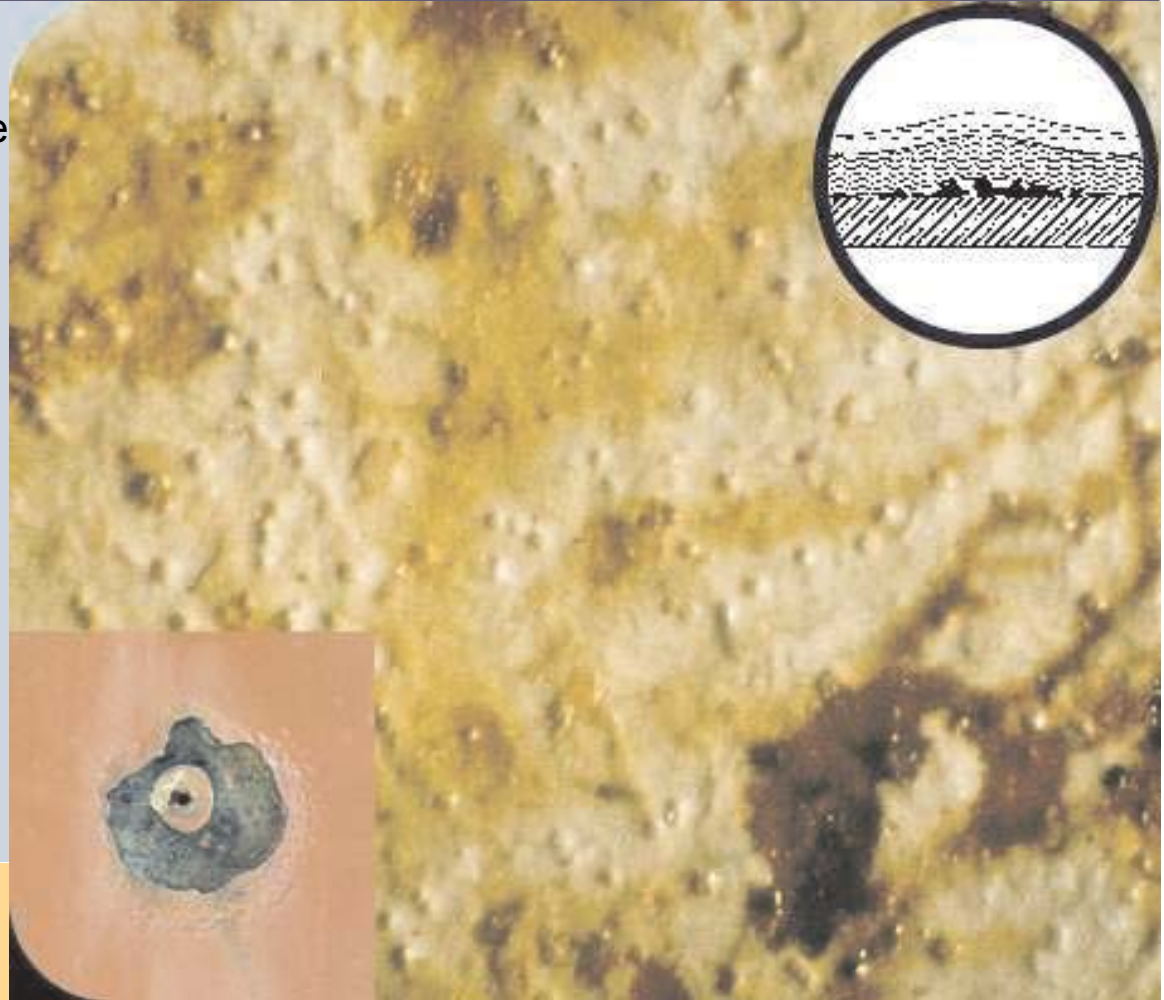
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Paint Defects Advice

Corrosion, Rust

How to Repair

Remove all paint and corrosion (rust) from the affected areas (by grinding, stripping, sandblasting). Thoroughly clean the area with an appropriate cleaner and wax and grease remover. Prime bare metal as quick as possible to avoid flash rusting and build up with the recommended primers, surfacers and top-coats.



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Paint Defects Advice

Water Marking

Definition

Water Spotting normally appears as light, whitish circular spots on the paint surface caused by the drying of a solution of water combined with mineral salts. The inner areas are normally intact, while the outer edge are often slightly raised.



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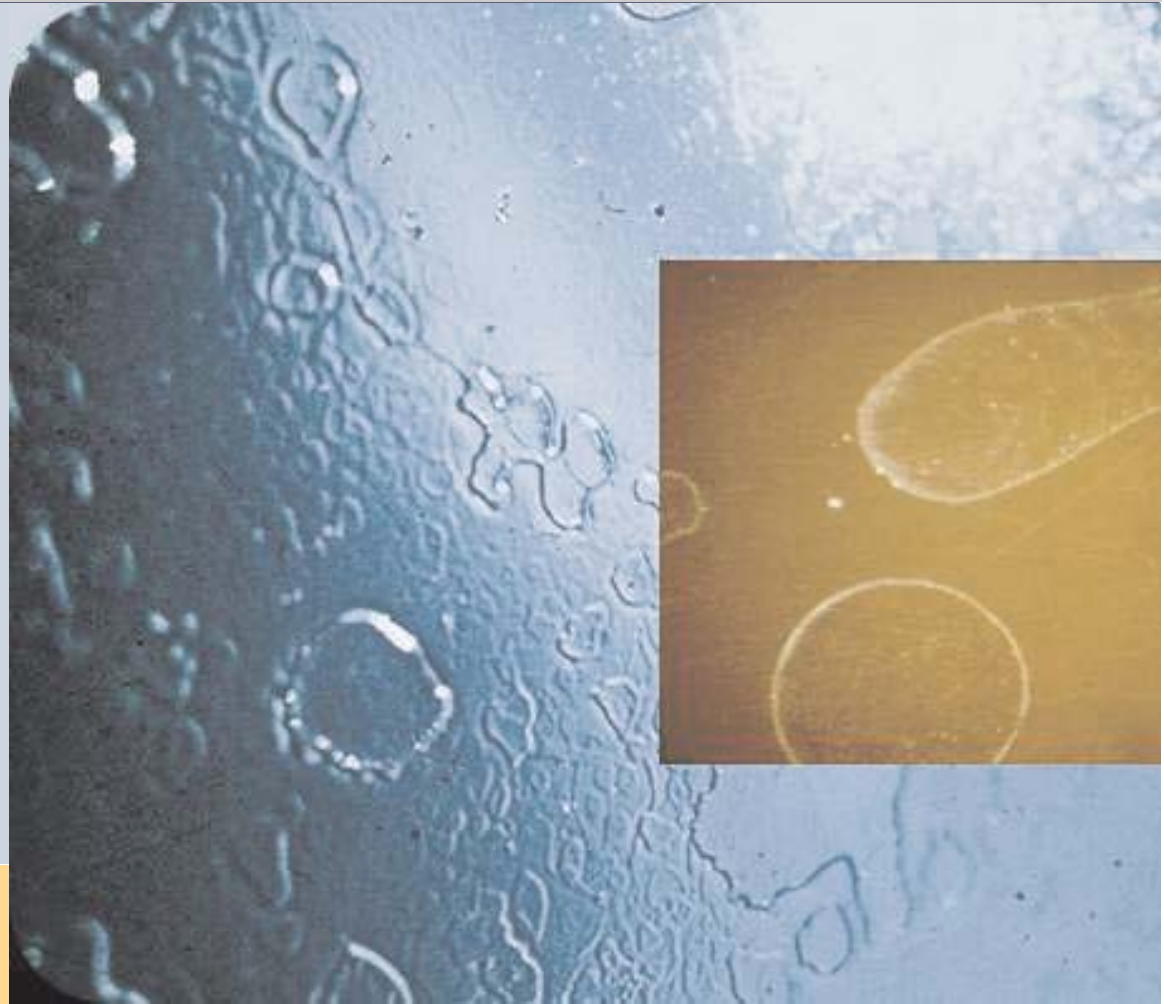
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Paint Defects Advice

Water Marking

Causes

- 1) Insufficient drying of fresh paintwork prior to being left in the rain.
- 2) Poor drying of paint due to thick coat application.
- 3) Incorrect hardener or quantity of hardener.



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Paint Defects Advice

Water Marking

How to Prevent

Ensure all fresh paints are applied using correct hardener, correct mixing ratio and the number of coats (film thickness) is correct and not excessive.



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Paint Defects Advice

Water Marking

How to Repair

If the damage is minor, first try washing with clean water; if this does not cure the problem polish with a fine polishing paste and finish with a high gloss polish. For severe damage, sand the surface, ensure it is thoroughly cured and repaint.



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Paint Defects Advice

Clouding

Definition

Spots or stripes of light and dark patches, mainly seen in metallic finishes.



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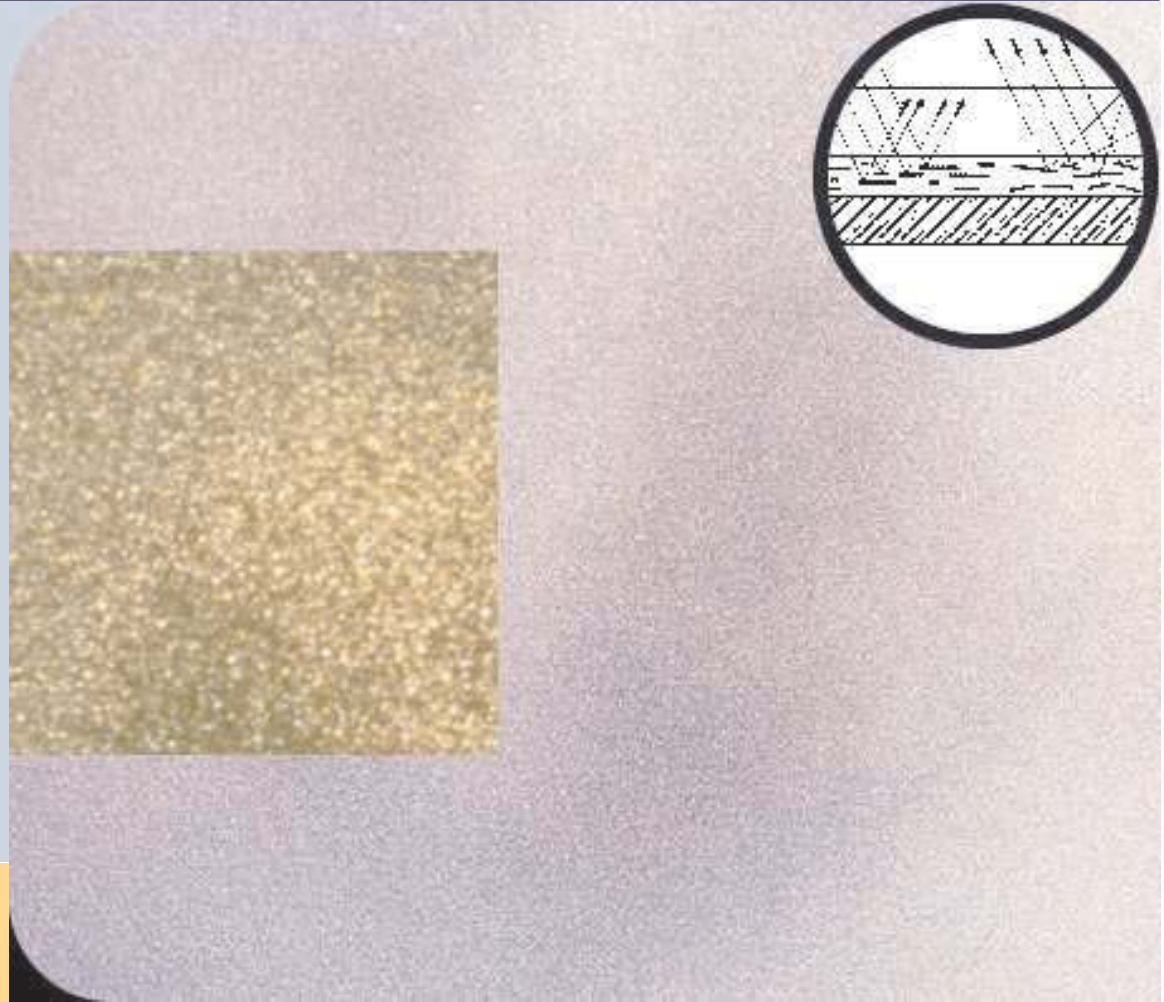
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Paint Defects Advice

Clouding

Causes

- 1) Uneven spray application.
- 2) Flash-off between coats or prior to application of clear coat too short.
- 3) Colour coat applied too heavy or too light.



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Paint Defects Advice

Clouding

How to Prevent

- 1) Application must be even and correctly overlapped with the previous gun stroke.
- 2) Ensure correct flash-off times are observed between coats.
- 3) Apply the basecoat as recommended in the technical information.



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Paint Defects Advice

Clouding

How to Repair

If clouding occurs during the application of the basecoat, compensate by spraying over the affected areas using the correct technique. If clouding occurs after the clear lacquer has been applied, allow to dry, sand down, and repaint, using the correct technique.



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