REJECTION

Rejection is defined as the inability of a coating to form a continuous film over another surface.

This inability to form a film may fit the description of;

- 'pulling back' from the edges of strip timber or parquetry
- 'pull back' leaving uncoated regions on coated or uncoated substrate
- a 'wax paper and water' effect with the coating wanting to join together with itself rather than 'flatten' or 'level' across the surface to be coated.

What are the Basic Causes of Rejection

1. **PHYSICAL** (related to 'Surface Energy')

2. **CHEMICAL** (related to chemical incompatibility, eg. Silicones)

For simplicity these causes will be combined in this Technical Bulletin.

For 'wetting' to occur, a lower SURFACE ENERGY (surface tension) coating needs to be applied over a higher energy one.

Rejection can be contributed by:

1. **Timber Species**
2. **Coatings Choice**
3. **Surface Preparation**
4. **External Contamination**

1. Timber Species

Timbers contain waxes, oils, resins, rosins, etc, to varying contents.

Local species such as Brush Box, Tallowwood, Cypress Pine and Spotted Gum, contain high levels of these materials and accordingly feature on the majority of floors that create a 'rejection' condition (Brush Box can contain up to 10% Arjunolic acid).

The term extractables is used for these materials and is coined from the ability of these items to be extracted from the timber by the applied coatings.

Why does rejection tend to be in the second coat ?

This solubility or extraction process enables an understanding as to why rejection usually appears in the second coat and not the first coat as one might at first expect.

Consider a waxy timber such as Brush Box which can contain up to 10% 'extractables'.

- Coat 1 is applied and soaks into the surface of the Brush Box.
- Solvents dissolve the 'extractables' and carry them into the wet film.
- As the solvent evaporates, an 'extractables rich' layer forms in the diminishing thickness solvent layer.

- These extractables are incompatible with polyurethane polymer and tend to sit on the surface of the dried film.
- The second coat of finish is applied over the 'extractables rich' surface. Note that screening will tend to 'smear' these materials and not necessarily remove them.
- The second coat has a higher surface energy than the waxy / oily first coat surface and tends to 'pull back' as it does not satisfy the requirement of the second coat to have a lower surface energy than the fist.
- Rejection has occurred.

Why do only some floors reject ?

The extractables content will vary significantly within a species. Often, only a few fingers of a parquetry floor will show a rejection condition.

It is presumed that only the very high content timber induces rejection conditions. Such timber is likely to feel greasy or waxy.

2. Coatings Choice

Polycure polyurethane finishes are formulated to a lower level of Surface Tension than many other brands making them perhaps the most rejection resistant family of finishes on the market.

In addition specialty products are available to provide for exceptionally high levels of rejection resistance for use in those situations where;

- rejection is likely
- rejection has occurred and rectification is required

Sureflow Additives 3350 is a Surface active additives assist the coatings in 'wetting' even the most difficult timbers (a side benefit of improved wetting is reduced 'quilting' effect with parquetry).

The cured surface of the coatings (i.e.Durapol Cork & Timber 1044 or Durapol Supergloss 1045) plus Sureflow Additives 3350 in turn assists the next coat of polyurethane resist the second coat rejection phenomenon.

Accordingly, many floor sanders will use coatings (i.e.Durapol Cork & Timber 1044 or Durapol Supergloss 1045) plus Sureflow Additives 3350 as 'insurance value' on potential problem timbers such as Brush Box, Tallowwood and Spotted Gum.

3. Surface Preparation

To obtain a continuous film of a coat ie. no rejection, surface preparation is important as this can influence Surface Energy requirements for rejection resistance.

- **Cleaning**

Especially important in a recoat situation. Presence of oil, waxes, grease, on a surface will promote rejection as well as delamination (in fact where rejection is present, adhesion is always a potential problem). If you suspect any such materials are suspect present, and in a recoat it is good practice to always assume they are, floor cleaning with a vinyl wax stripper prior to coating is recommended. Screening or wiping with a solvent rag will not remove them, rather these processes are more likely to spread or broadcast these contaminants over the floor.

- **Sanding**

The fine channels from the screening process encourage 'wetting' by a 'capillary action' as well as providing for adhesion via mechanical anchorage. A floor that is poorly screened will be more subject to exhibiting a rejection condition. A low spot in a floor that is not sanded as well may have a lower surface energy than the rest of the floor and will therefore be more prone to rejection.

- **Solvent Washing**

Better wetting is obtained on a solvent wiped floor. The wetting action from slightly softening the coating surface (especially with Recoat Fluid 3330 in a re-coating process) is essential to maximising the potential for good adhesion and wiping off excess contaminants.

- **Previously Coated Surfaces**

Timber coated previously with adhesives, sealers, etc, may have a contaminant film on them after sanding. This film may contribute to later coating rejection. Addition of Sureflow Additives 3350 in the coatings would be suggested in such a situation.

4. External Contamination

May arise from film forming furniture polishes and other aerosols. Silicone is the most powerful rejection material known and unfortunately it is present in many furniture polishes.

Rectification of a Rejected Floor

In a major rejection situations it may be necessary to cut back to bare timber and repeat the coating process. The Durapol Cork & Timber 1044 or Durapol Supergloss 1045) plus Sureflow Additives 3350/ Durapol Cork & Timber 1044 or Durapol Supergloss 1045) plus Sureflow Additives 3350/ Durapol Cork & Timber 1044 or Durapol Supergloss 1045) plus Sureflow Additives 3350 system.

However, rectification of severe cases can often be corrected via:

- washing the floor using Thinners 3310 taking extra care to get to the base of the rejection craters.
- Ensure rags are changed every 5 square metres
- Heavily sand the floor to the base of the craters using 80 to 100 grit abrasive.
- Failure to sand to base of craters will result in later 'witnessing' of them through the next coat.
- Vacuum the floor surface thoroughly.
- Sand floor again with 120 grade sandpaper or screen back until the floor is uniformly dull and free from all scratches.
- Vacuum the floor surface thoroughly.
- Repeat washing with Thinners 3310.
- Recoat with Addition of Sureflow Additives 3350 in the coatings following all directions on the label for the products.

NOTE :

This procedure will rectify the majority of severe rejection cases but no process will guarantee 100% success all of the time.

PLEASE CONTACT POLYCURE'S TECHNICAL SERVICE DEPARTMENT OR YOUR LOCAL POLYCURE ACCOUNT EXECUTIVE FOR FURTHER FREE ADVICE.

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