INTRODUCTION TO SELF ADHESIVE FILMS

HOW IS VINYL MADE?

Three main components.

- Top sheet
- Adhesive
- Backing Paper

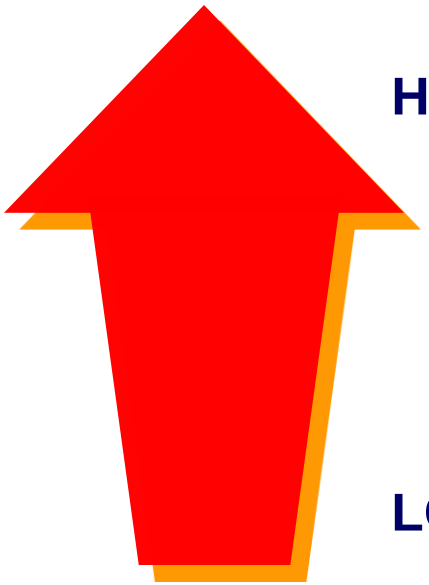
THE MANUFACTURING PROCESS

COATING AND FINISHING LINE–MACTAC EUROPE

BACKING PAPER

RELEASE

BOND OF THE ADHESIVE TO THE BACKING PAPER



HIGH RELEASE=Difficult separation

LOW RELEASE=Easy separation

THE MANUFACTURING PROCESS

COATING AND FINISHING LINE–MACTAC EUROPE

ADHESIVES-Basic Properties

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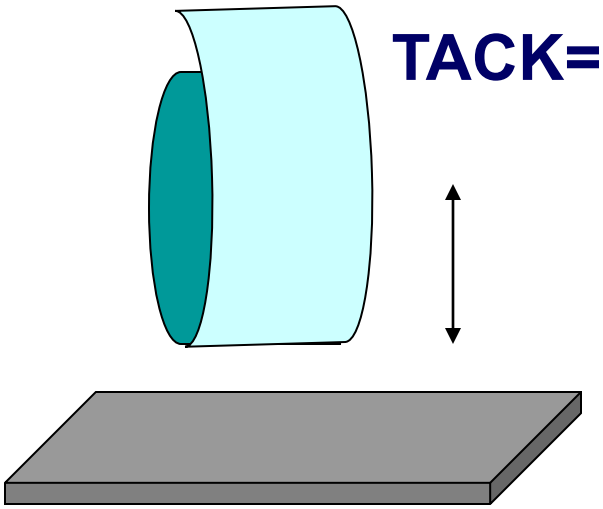
ADHESIVES-Basic Properties

TACK



TACK=INITIAL ADHESION=“GRAB”

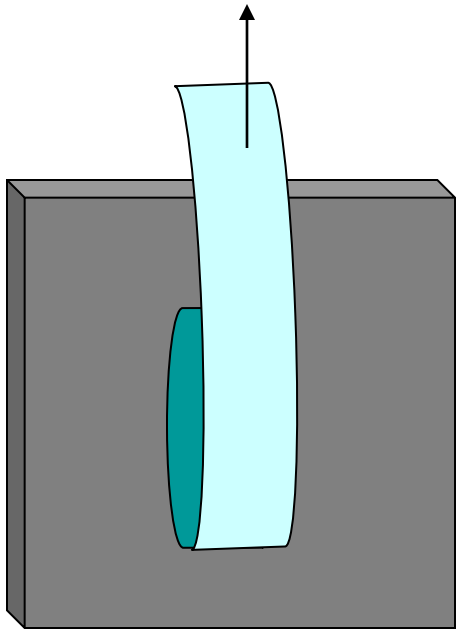
no application pressure

no conditioning

measured in Newtons

ADHESIVES-Basic Properties

ADHESION



PEEL=FINAL ADHESION

application pressure

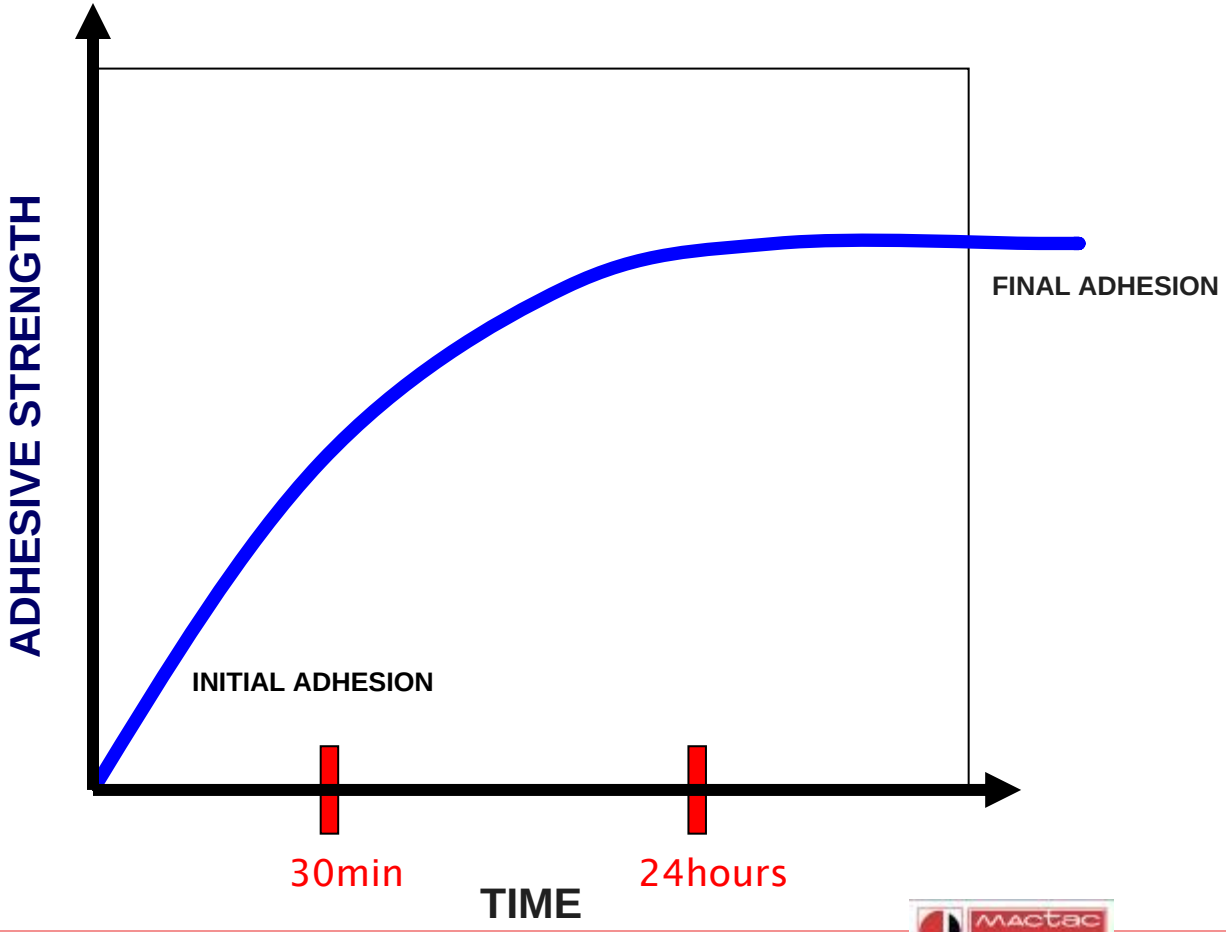
and

specified conditioning time

measured in Newtons

ADHESIVES-Basic Properties

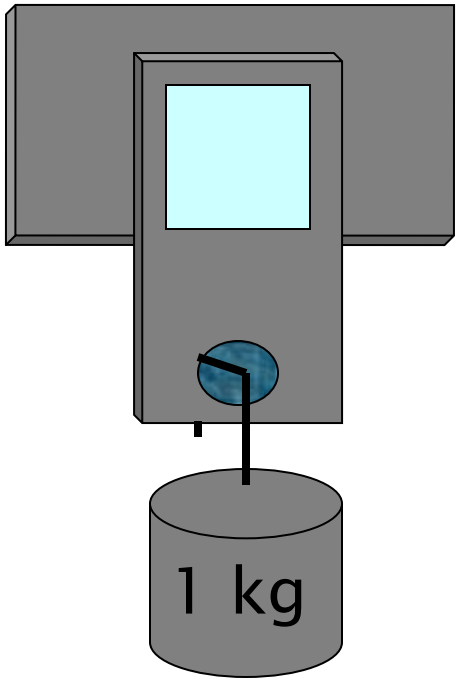
TACK vs ADHESION



ADHESIVES-Basic Properties

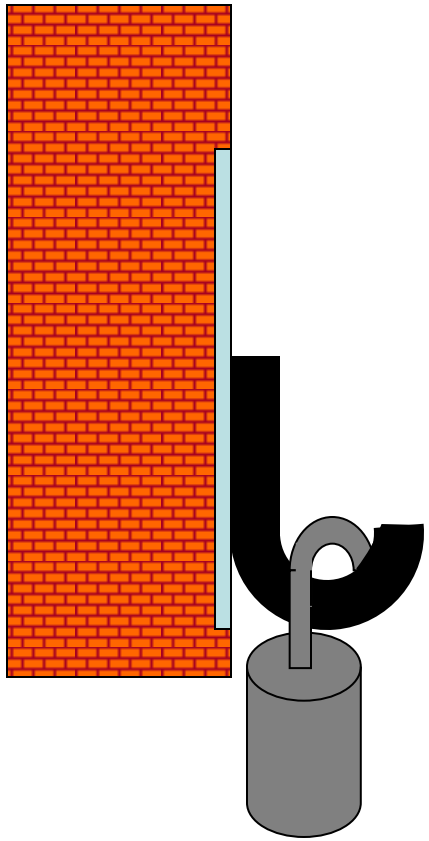
COHESION

CREEP=INTERNAL STRENGTH=SHEAR RESISTANCE

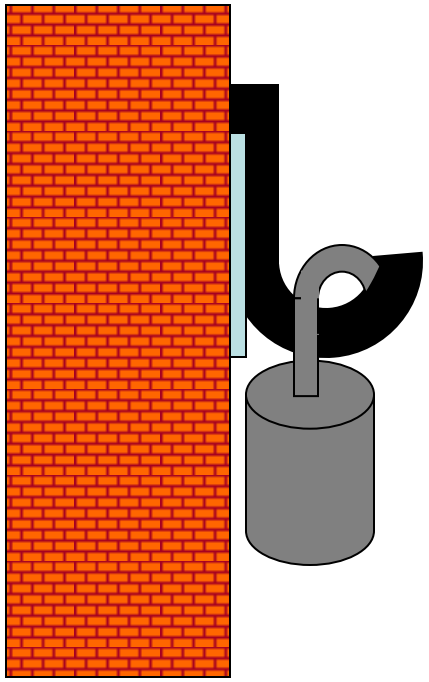


Measured in hours until weight drops

ADHESIVES-Basic Properties

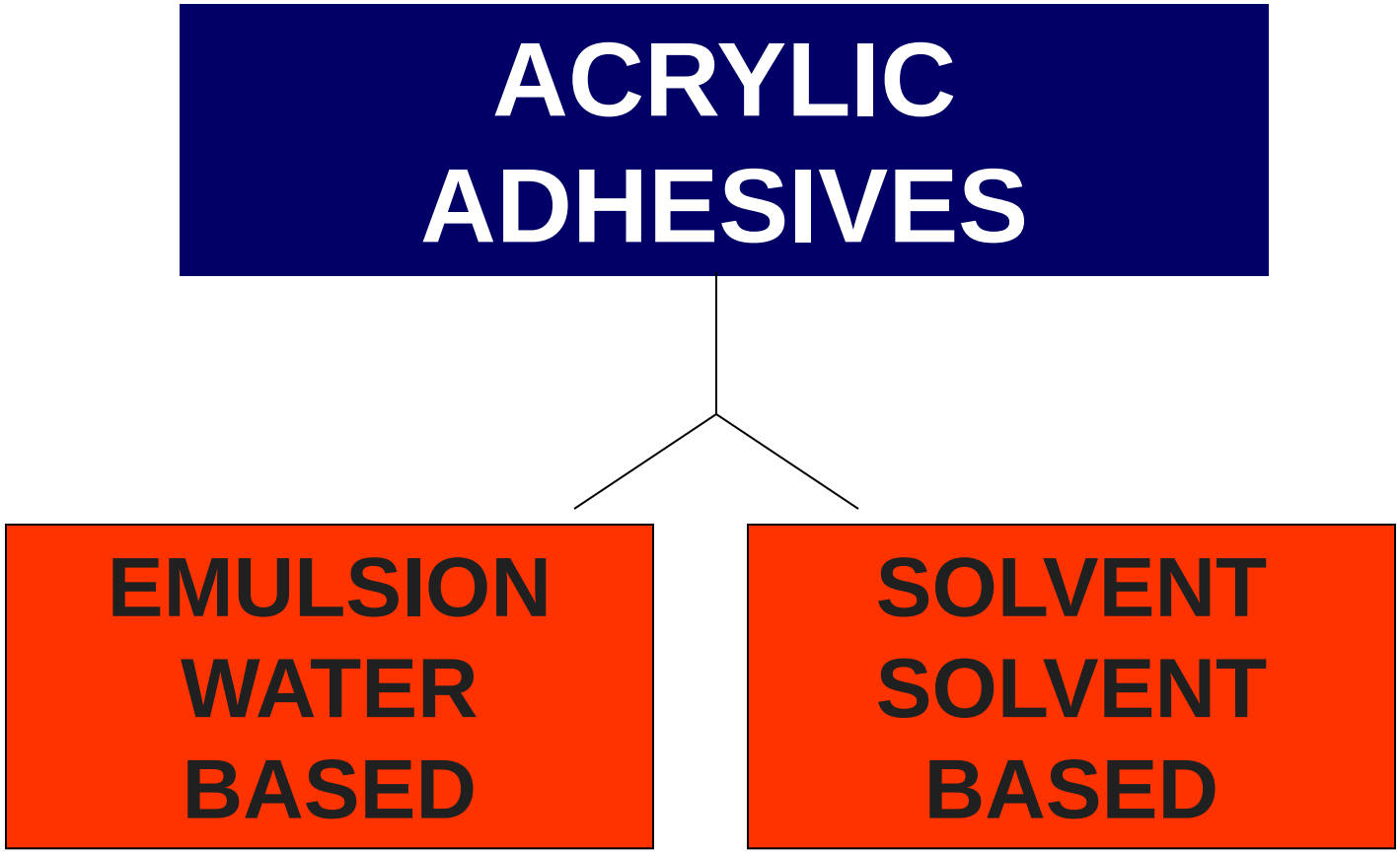


LOW COHESIVE ADHESIVE



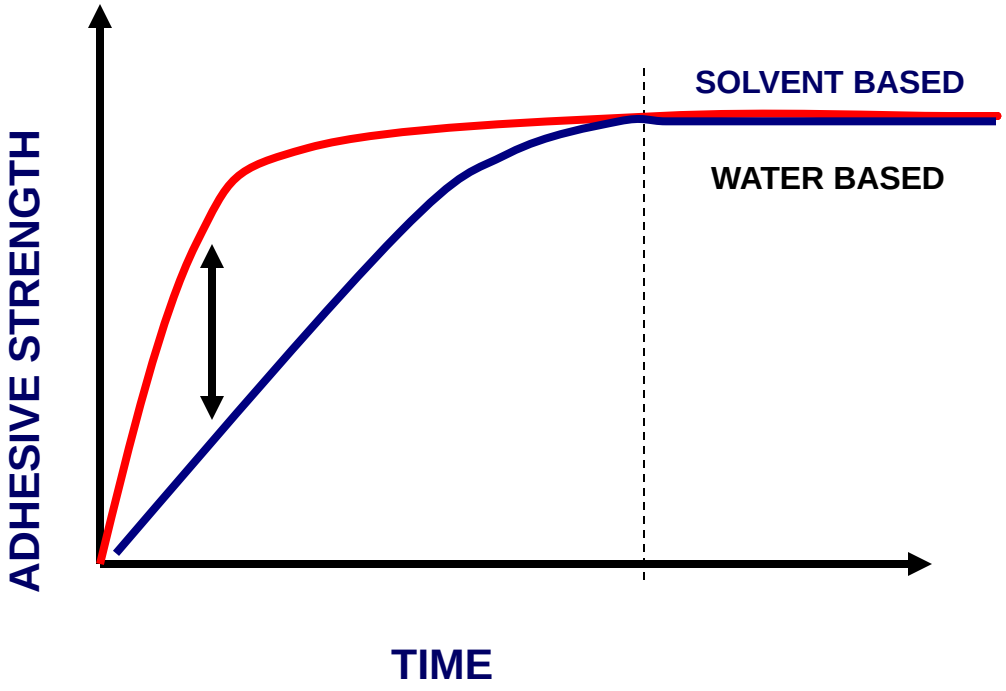
HIGH COHESIVE ADHESIVE

TYPES OF ADHESIVES



TYPES OF ADHESIVES

WATER BASED VS SOLVENT BASED



TYPES OF ADHESIVE

WATER BASED vs SOLVENT BASED

- Lower initial tack
- Easier to apply dry
- Can have problems with wet applications
- Not suitable for graphics on boats

- Higher initial tack
- Apply wet or dry
- Water resistant
- Ideal for boat applications

ADHESIVES-Surface Energy Levels

VERY LOW
(<29 dyne/cm)

Silicones Teflon
Tedlar

Anti-adherent materials

LOW
(29-37 dyne/cm)

Polyethylene Polypropylene
Polystyrene Rubber
Melamine coatings

Difficult to adhere substrates

AVERAGE
(38-50 d yne/cm)

Plexiglass PVC
Polycarbonate ABS Polyester
Acrylic varnishes

Easy to adhere substrates

HIGH
(>50 dyne/cm)

Glass Metals Ceramic

Very easy to adhere to substrates

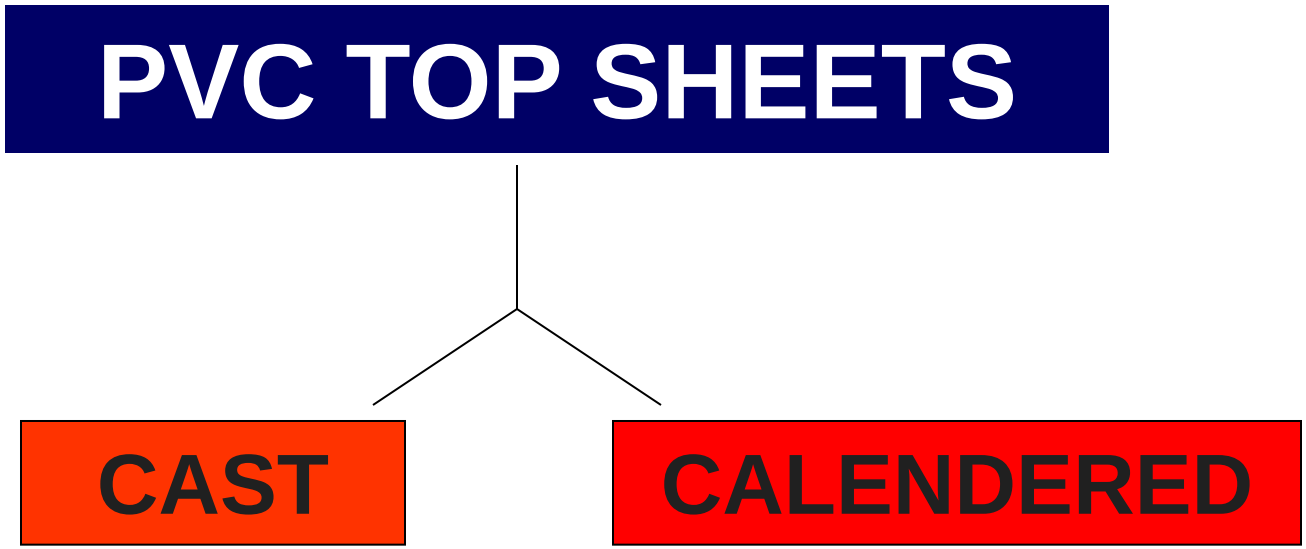
APPLICATION

- Temperature >10degrees
- Special adhesives –cold temperature
- 24 hour rule
- Keep water to a minimum
- Do not use enzyme detergents
- Do not use wet method with removable adhesives

THE MANUFACTURING PROCESS

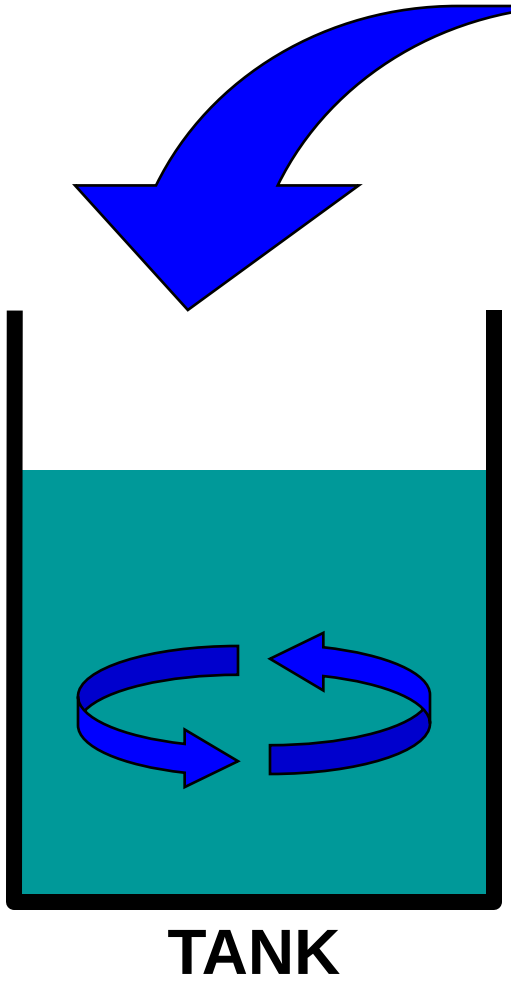
COATING AND FINISHING LINE–MACTAC EUROPE

TOP SHEETS



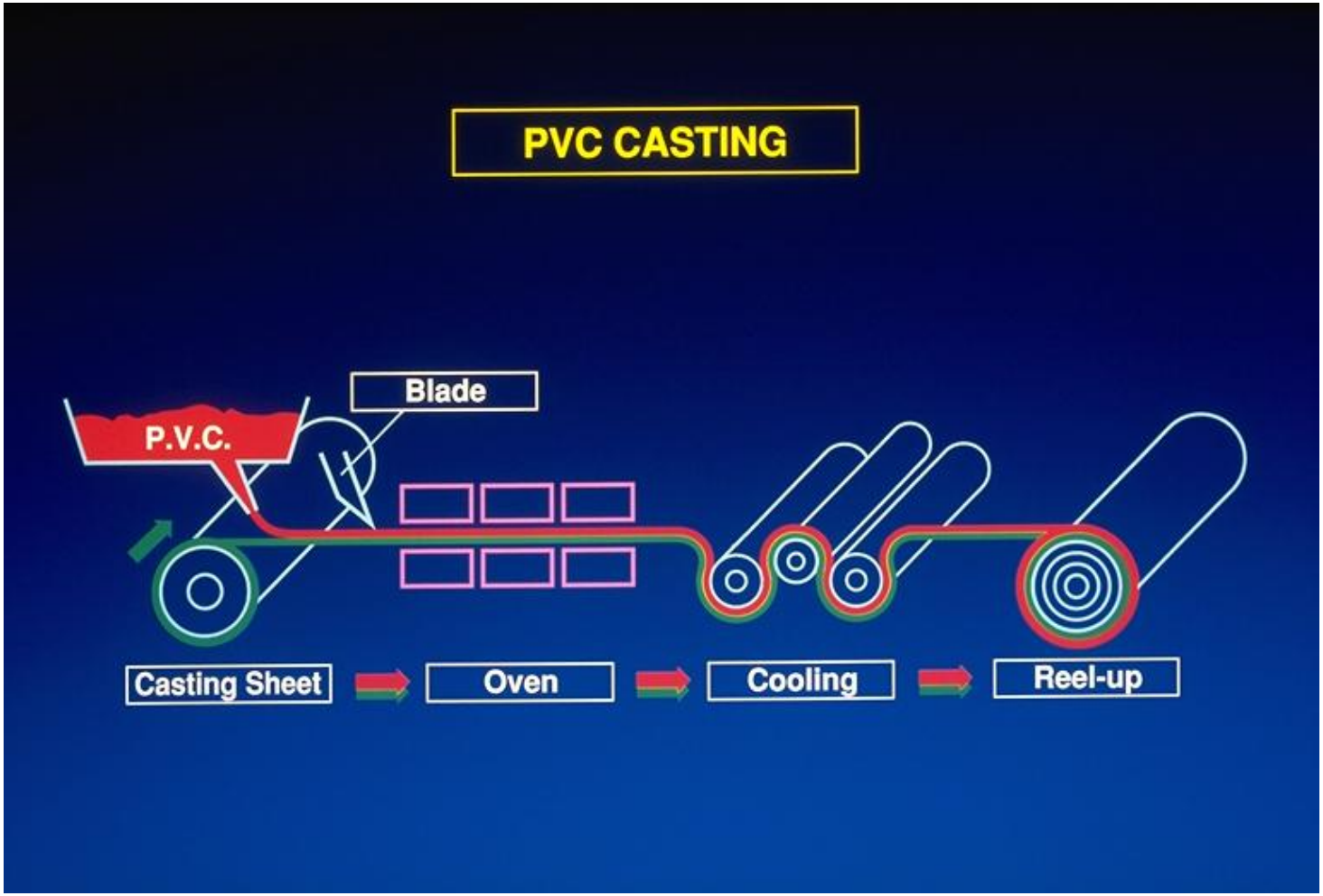
VINYL PRODUCTION TECHNIQUES

CAST PROCESS



- Solvents
- **PVC (powder)**
- **Plasticizer**
- **Opacifiers (TiO_2)**
- **Pigments (colours)**
- **Stabilisers**
- **UV absorbers**

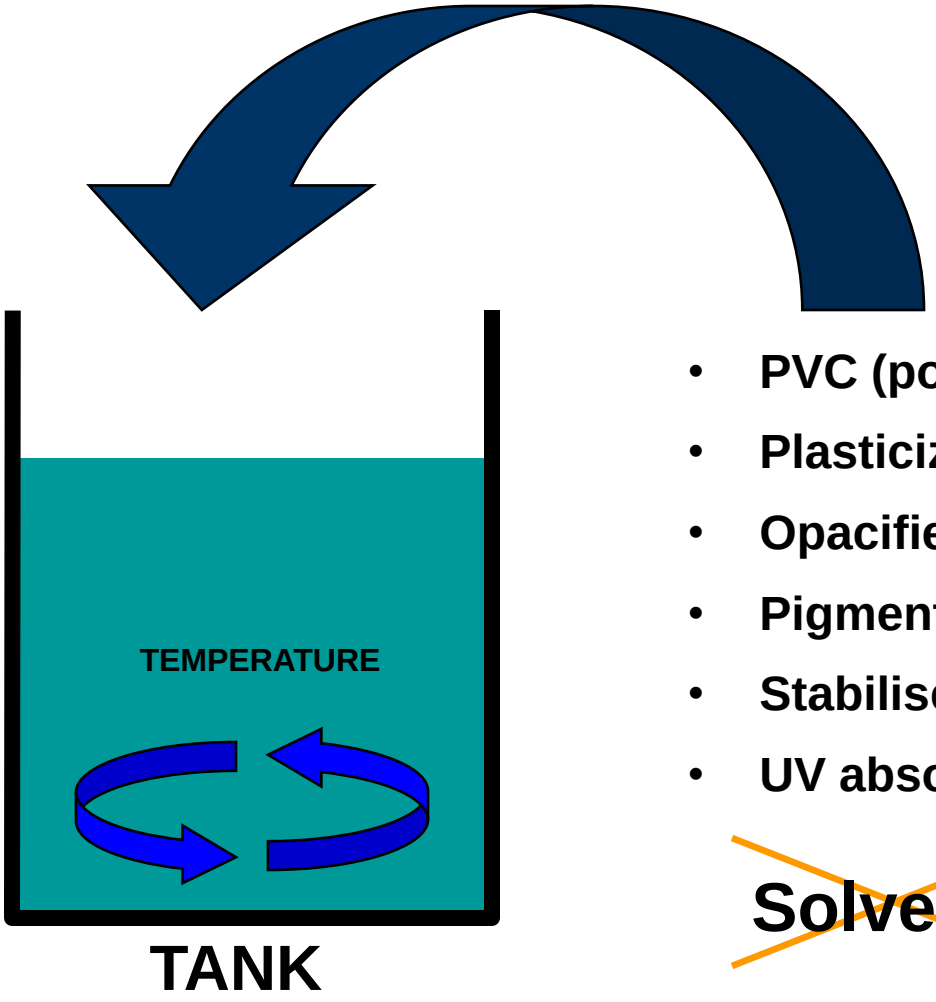
CAST PROCESS



CAST PROCESS

VINYL PRODUCTION TECHNIQUES

CALENDERING PROCESS



- PVC (powder)
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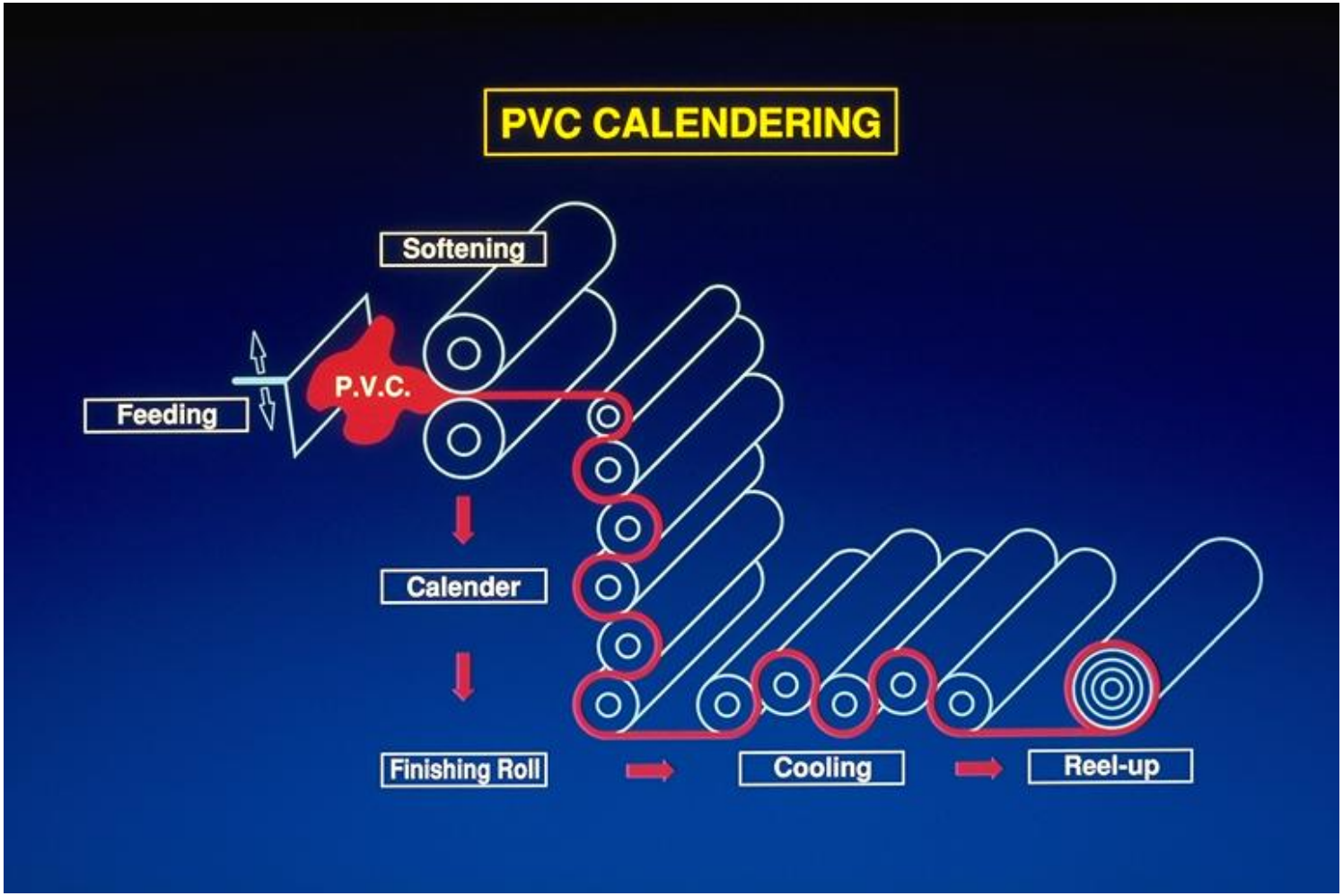
- UV absorbers

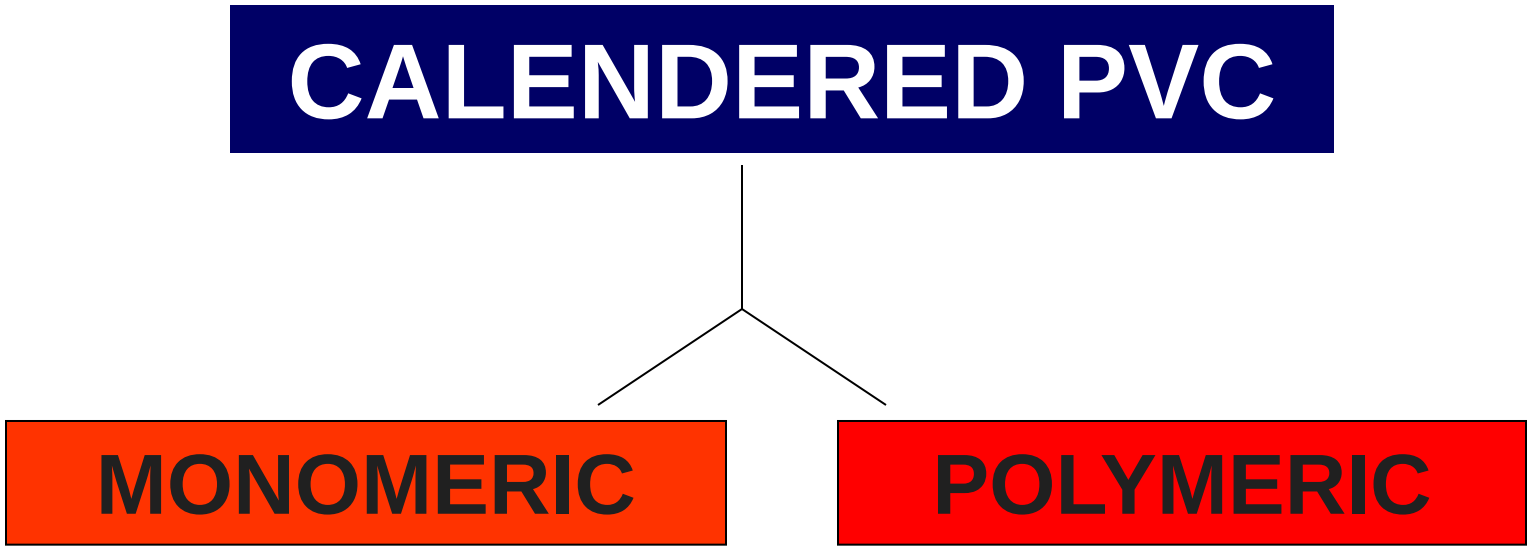
~~Solvents~~

CALENDERING PROCESS

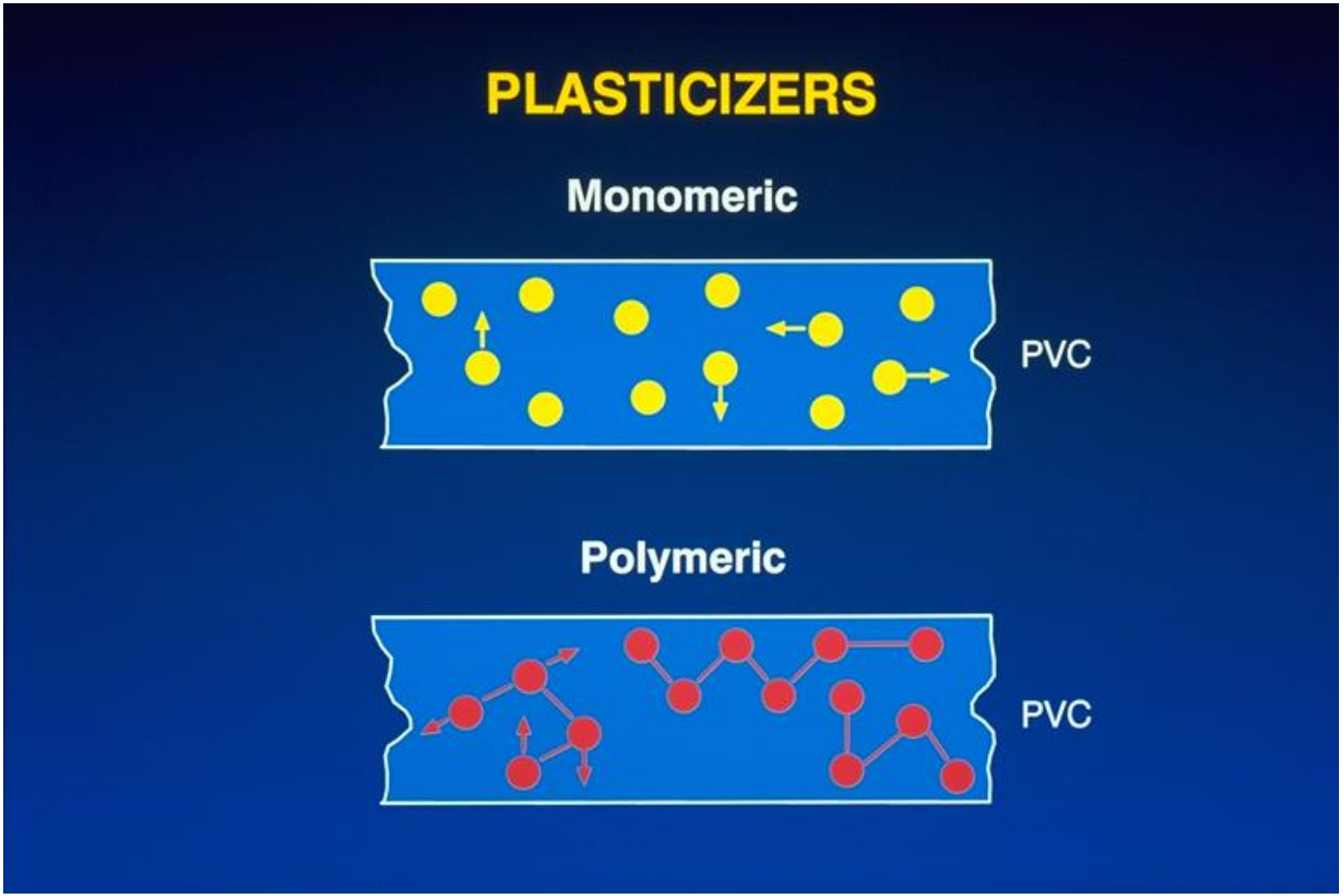


CALENDERING PROCESS

CALENDERED VINYL



CALENDERED VINYL



CALENDERED

MONOMERIC VS POLYMERIC

- Small single molecules
- Not very stable
- Thicker and less conformable
- Suitable for short to medium term applications 2-5 years

- Linked molecules in chains
- Very stable
- Less shrinkage
- Thin, soft, conformable
- Long term applications 5-8 years

CHOOSING THE RIGHT VINYL

When deciding which product to use consider..

- What is expected from the face material?
- What are the adhesive performance requirements?
- What are the surface properties?
- What are the application conditions?