Product Application

REICHHOLD

Everywhere Performance Matters

GELCOAT APPLICATION

- BRUSH (H)
- SPRAY (S)

THE GELCOAT, AS WELL AS THE MOULD AND THE WORKSHOP, SHOULD HAVE A TEMPERATURE OF 18°C to 45°C AND MAXIMUM RELATIVE HUMIDITY OF 75%

BEFORE USE, ADD 1.2-1.8 % MEK-PEROXIDE

MIX THE PEROXIDE THOROUGHLY AND CAREFULLY INTO THE GELCOAT

BRUSH APPLICATION

- **SOFT BRUSH**
- **FIRST COAT 0.5 mm WET FILM**
- **SECOND COAT 0.4 mm WET FILM**
- **BRUSHES SHOULD BE CHANGED AND CLEANED EVERY 15 MINUTES**






SPRAY APPLICATION

- **SPRAY 4 LAYERS WET-IN-WET: 0,15 - 0,2 MM PER COAT**
- **WAITING TIME: 3-5 MIN. BETWEEN THE LAYERS**
- **THIS TO AVOID PORE DEVELOPMENT**

NB: USE SPECIAL SPRAY EQUIPMENT

GELCOAT APPLICATION

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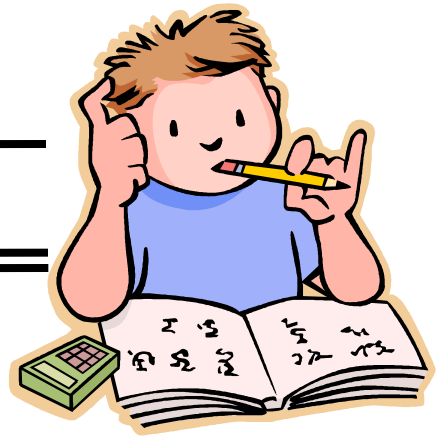
Basic calculation

The surface of the finished product will reflect the surface of the mould, if ……..

PERFECT MOULD
\+ PERFECT APPLICATION
\+ CORRECT MATERIAL SELECTION
\+ OPTIMAL CONDITIONS
= PERFECT PRODUCT



The perfect GRP surface ….

The quality of the gelcoat surface depends on :

- Mould and mould maintenance
- Gelcoat application
- Gelcoat type
- Laminate – material selection & procedure
- Operators
- Management

Mould .....

Complex moulds (i.e. boat decks) require much more attention than simple moulds (i.e. boat hulls) when it comes to

- Mould maintenance
- Care during gelcoat application






…….. and mould maintenance

Know your release agent !

- Traditional wax types
  Good release properties
  Normally more hard to polish to high gloss
- Semi-permanent release system
  Easy application, multiple releases
  Can be too good release for some moulds !

Use release systems intended for GRP products

Gelcoat type

The gelcoat type is normally selected based on the end requirements.

Changing from one gelcoat type to another might result in changes required in the production process.

Laminate – material selection & procedure

Many problems relating from material selection and/or production procedure of the laminate will be visible on the gelcoat surface ……

….. and the gelcoat will often be blamed !!

Operators

An experienced gelcoat spray operator with

- Knowledge about own moulds
- Good spraying technique
- Experience in basic trouble shooting

“is worth his weight in gold”

Management

Management responsibilities does not only involve making the right application equipment available, but also allow the time to use it properly.

5 minutes extra allowed for gelcoat application can save 5 hours repair work afterwards.






Gelcoat application

- Brush application
- Roller application
- Cup spray (low pressure)
- High pressure gelcoaters

Brush application

Used in ≈30% of gelcoat applications and ≈75% of topcoat applications

- Gelcoat application in 2 layers recommended (alt. 1st layer brush, 2nd layer roller)
- Control peroxide addition (weight or volume)

Roller application

Often used in small moulds and flat panels, or for application of 2nd layer.

- Control peroxide addition (weight or volume)
- Use wet film gauge !!!

  Very easy to apply too thin gelcoat film

Cup spray (low pressure)

Not much used for general gelcoat application, more for repair work.

- Control peroxide addition (weight or volume)
- Dilution normally required for conventional spray gelcoats.

  Max. 5-7 % styrene recommended.

  Do not use other solvents (acetone etc.)

High pressure gelcoaters

Special spray machines designed for gelcoat application.

- Peroxide addition normally by slave pump
- Internal or external peroxide mix
- Airless or air-assist
- Wide selection of nozzles

High pressure gelcoaters

Equipment capacity vs nozzle size

- Aplicator IPG 6000 and Binks B6

Nozzle	Aplicator	Binks
Pump pressure	5,0 bar	4,6 bar
Pump ratio	15 : 1	33 : 1
Nozzle 18 / 40	≈ 800 g/min	≈ 1100 g/min
Nozzle 21 / 40	≈ 1000 g/min	≈ 1600 g/min
Nozzle 26 / 40	≈ 1300 g/min	-
Nozzle 31 / 40	≈ 2400 g/min	-
Nozzle 36 / 40	≈ 2900 g/min	≈ 4000 g/min

Tested on a standard viscosity NORPOL Spray gelcoat

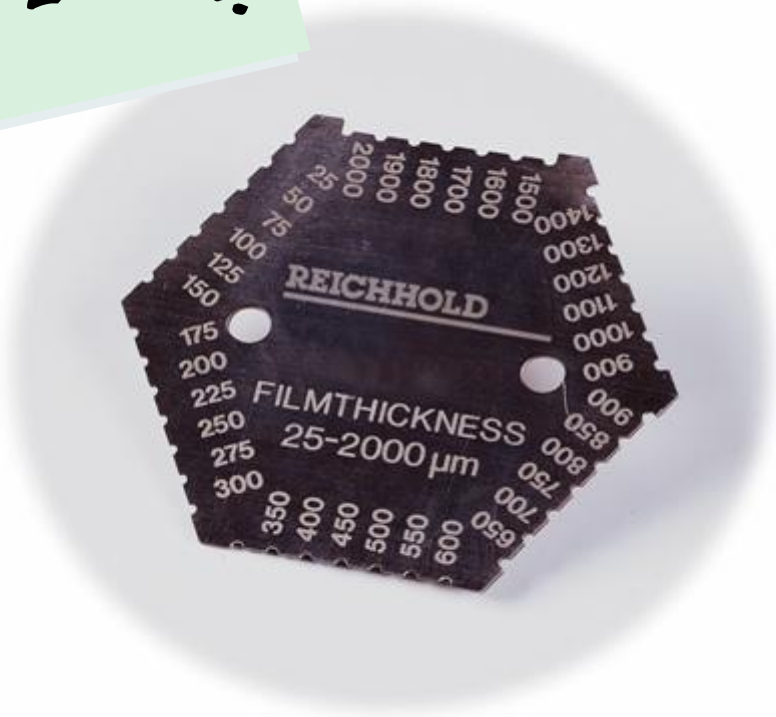
High pressure gelcoaters

Equipment in general ;

- Replace worn and damaged nozzles
- Clean air for air atomization
- Spray distance 50-70 cm
- Start/stop spraying outside mould

  Especially important when having external peroxide mix, or spraying metallic gelcoat

Final wish ……..



This is a very powerful tool,

not a decorative wall item

METHODS OF APPLICATION

GELCOAT

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THE QUALITY OF THE GELCOAT DEPENDS ON:

- **MOULDS / MOULD**
- **MAINTENANCE**
- **GELCOAT APPLICATION**
- **GELCOAT TYPE**
- **OPERATORS / LEADERSHIP**

AIRLESS SPRAY EQUIPMENT

THE GELCOAT IS DISTRIBUTED WITHOUT

The spray equipment is equipped with pumps and gelcoat/catalyst can therefore be applied without addition of air to the mixture

TWO SYSTEMS

A. INTERNAL CATALYST BLENDING
(catalyst mixed before nozzle)

B. EXTERNAL CATALYST BLENDING
(catalyst mixed outside nozzle)

GELCOAT VISCOSITY

NEGATIVE - GELCOAT VISCOSITY TOO *HIGH*:

- Poor leveling/poor break up (fingers)
- Too low output
- Increased porosity
- Check catalyst ratio (external catalyst blending)

NEGATIVE - GELCOAT VISCOSITY TOO *LOW*:

- Too high output
- Sagging
- Too thick Gelcoat film may easily be the result
- Check catalyst ratio (external catalyst blending)

RECOMMENDED PRESSURE

- **GENERALLY 4-6 kp/cm² (60-85 PSI)**
- **Recommendations depend on Gelcoat viscosity and spray equipment**

RECOMMENDED MAINTENANCE

- **DAILY CLEANING WITH THE APPROPRIATE SOLVENT OF ALL PARTS WHICH HAVE BEEN IN CONTACT WITH LIQUIDS.**
- **DAILY DRAINING OF ALL WATER FROM WATER SEPARATOR AND COMPRESSOR TANK.**
- **WEEKLY CONTROL OF ALL VITAL PARTS.**

RECOMMENDED SPARE PARTS

- **SPRAY NOZZLES**
- **SEALINGS, GASKETS AND O-RINGS**
- **HOZES**
- **FLOWMETRE**
- **FILTER**
- **RECOMMENDED LUBRICANT OIL**

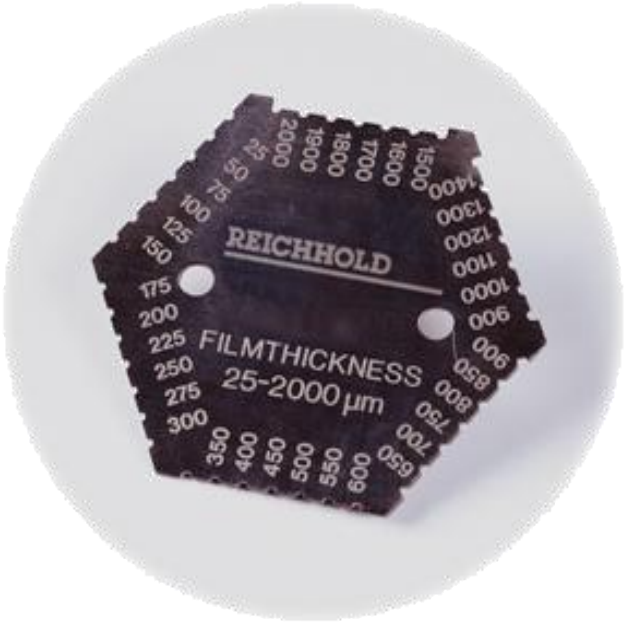
Storage

Our standard gelcoats have a storage stability of at least 6 months from date of manufacture provided that:

- **Storage temperature is 23°C or below**
- **The gelcoat is stored in a closed, factory sealed and opaque container**
- **The gelcoat is stored out of direct sunlight**

If storage of Norpol Gelcoat is not according to our recommendations then the usage life will be decreased.

Applying the gelcoat



- Before use, add 1,2-2,0% MEK-peroxide 50% or equivalent. Mix the peroxide thoroughly and carefully into the gelcoat.
- Recommended gelcoat film thickness is 500-800 µm wet.
- Always check the film thickness with a wet film thickness gauge.






CURING CONDITIONS

TEMPERATURE:

- **ON THE MOULD**
- **IN SPRAY BOOTH**
- **IN THE GELCOAT**

- **TYPE AND RATIO OF CATALYST**
- **CORRECT FILM THICKNESS**
- **GELCOAT CONTAMINATION**
- **GELCOAT TOO OLD**

FILM THICKNESS

TOO THIN GELCOAT FILM

GIVES:

- **STYRENE DEFICIENCY AND RESULTANT INCOMPLETE CURE (not optimal quality)**
- **RAPID DIFFUSION OF WATER (fluid) THROUGH THE GELCOAT FILM**

RECOMMENDED FILM THICKNESS

- **IN CURED STATE:**

- **400 µ - 700 µ**

APPLICATION OF THE GELCOAT

Gelcoat film thickness may be the single most important control point in the process.

Range of acceptable thickness is between 16-24 mils (400-600 my) cured.

Out of spec. Gelcoat thickness can cause a variety of problems

- **Thin Gelcoat under cure**
- **Thick Gelcoat cracking**

It is important to achieve the proper thickness in the most highly stressed areas (corner areas)