

Assessment Requirements

Unit PO0205K – Knowledge of Applying Fillers and Foundation Materials

Content:

The types of substrates likely to be found in vehicle refinishing

- a. List types of substrate to include:
 - i. steel
 - ii. aluminium
 - iii. all plastics
 - iv. coated steels
 - v. high bake Enamels (O E finishes)
 - vi. 2 K Paints
 - vii. 1K Paints
 - viii. clear over bases
 - ix. polyester fillers
 - x. repaired panels
 - xi. primed panels (E coat)
- b. Identify substrates to determine selection of undercoat with reference to:
 - i. condition of surface
 - ii. type of substrate
 - iii. process requirements
 - iv. material requirement
 - v. list the physical properties of a substrate to include:
 - vi. surface condition
 - vii. adhesion
 - viii. flexibility
 - ix. porosity
 - x. texture

Methods used in determining vehicle substrates

- a. Workshop tests to determine substrates to include:
 - i. visual test for aluminium, plastics
 - ii. magnet test for steel
- b. For determination of paint type:
 - i. compound small area
 - ii. solvent wipe test (1k or 2k)
 - iii. colour of flattening sludge (straight colour or C O B)

The properties and correct use of conditioning materials

- a. State that a vehicle must be thoroughly washed and cleaned prior to refinishing to include:
 - i. outside body panels
 - ii. under arches
 - iii. under bonnet
 - iv. all apertures
 - v. degreased
- b. State the reasons for masking components adjacent to repair areas.
- c. State the correct preparation of parts prior to painting to include products used for the removal of:
 - i. wax
 - ii. grease

- iii. skin oils
 - iv. dust
 - v. water
 - vi. abrasive contaminants
 - vii. environmental pollution
- d. Identify materials used for conditioning processes such as:
- i. wax and grease removers
 - ii. spirit wipes
 - iii. acid based
 - iv. water based
- e. The correct and safe use of the above materials.
- f. State the properties of pre-preparation material to include:
- i. neutralisation
 - ii. ability to alter the surface
 - iii. reaction with oxide

The types and properties of fillers and foundation materials in common use

- a. State what the ingredients of paint are to include:
- i. pigment
 - ii. binder/vehicle
 - iii. solvent/thinner/reducer
 - iv. additives
- b. Properties of pigments to include:
- i. opacity
 - ii. colour
 - iii. build
 - iv. easy flattening
 - v. corrosion resistance
- c. State that the forms of pigments that are:
- i. natural ground powders
 - ii. synthetic powders and dyes
- d. The uses of pigments in paints such as:
- i. stoppers/putties
 - ii. etch primers
 - iii. primer surfacers
 - iv. primer filler
- e. The properties of binders to include:
- i. film forming
 - ii. binding
 - iii. cohesion
 - iv. adhesion
 - v. flexibility
- f. State the forms of binder which dry by the following methods:
- i. solvent evaporation only
 - ii. oxidation
 - iii. polymerisation
- g. The properties of solvent/thinners to include:
- i. speed of evaporation
 - ii. its ability to dissolve the binder
 - iii. its ability to be tolerated by a binder
- h. The use of solvent/thinner:
- i. to make the paint fluid in the tin
 - ii. to reduce the paint to a spraying/ application viscosity
- i. State the meaning of paint terms such as:
- i. activator

- ii. adhesion
- iii. build
- iv. cohesion
- v. compatibility
- vi. curtains
- vii. degreaser
- viii. drier
- ix. enamel
- x. etch
- xi. flash off
- xii. floating
- xiii. gloss
- xiv. hardener
- xv. lacquer
- xvi. opacity
- xvii. pigment
- xviii. polymerization
- xix. pot life
- xx. shelf life
- xxi. substrate
- xxii. thermoplastic
- xxiii. thermosetting
- xxiv. thixotropic
- xxv. two pack
- xxvi. viscosity

Explain the difference between types of paints to include:

- i. non convertible, i.e.
- ii. nitro cellulose
- iii. 1k acrylics
- iv. basecoats

Convertible:

- i. two packs
- ii. oil based synthetic enamels

a. List the types of undercoat in common use to include:

- i. etch primer
- ii. primer surfacer
- iii. primer filler
- iv. stopper/putty
- v. sealers
- vi. anti stone chip
- vii. polyester fillers

b. The characteristics of these undercoats such as:

- i. protection
- ii. corrosion resistance
- iii. flexibility
- iv. build
- v. drying
- vi. flattening

c. List the types and characteristics of common protective coatings such as:

- i. zinc rich primers
- ii. bitumen based
- iii. anti stone chip
- iv. etch primer
- v. PVC

The factors affecting the choice and use of fillers and foundation materials

- a. State the reasons for using paint to include:
 - i. protection
 - ii. filling
 - iii. decoration
 - iv. identification
 - v. safety
- b. Use process data sheets to determine information such as:
 - i. material description
 - ii. material properties
 - iii. material characteristics
 - iv. limitations
 - v. related materials
 - vi. mixing ratios
 - vii. viscosity
 - viii. build film thickness
 - ix. pot life
- c. Describe the procedure for the preparation of minor damage to include:
 - i. paint removal
 - ii. feather edge
 - iii. surface condition
 - iv. substrate identification
 - v. cleanliness
 - vi. achieving correct contour
- d. Describe the problems of over catalysed body filled areas
- e. Identify the correct Health and Safety procedures associated with body fillers
- f. Describe aids and techniques which can be used to achieve the correct contour of a filled area
- g. List undercoat materials for plastics to include:
 - i. adhesion promoters
 - ii. surface modifiers
 - iii. flexible additives
 - iv. texture additives

The procedures for the mixing, application and curing of single and 2-pack fillers and stoppers

- a. The properties of 2k stoppers to include:
 - i. convertible coating
 - ii. drying
 - iii. build
- b. The properties of 1K stoppers to include:
 - i. non convertible coating
 - ii. drying
 - iii. build
- c. The use of 2K and 1K stoppers to include:
 - i. 2k used for the filling of minor imperfections in 2K system
- d. That 1K stopper is ready for use.
- e. That 2k stopper is mixed with activator just prior to use.
- f. That 1K stopper has to be applied:
 - i. in thin layers and with adequate flash off
- g. That 2K stopper can be applied.
 - i. in thicker layers and is cured after 20 mins (quicker with heat)
 - ii. 1K used for the filling of minor imperfections in 1K system

The procedures for mixing foundation materials to the correct ratio with hardeners and thinners

- a. Describe procedures for mixing undercoats such as:
 - i. etch primers

- ii. anti-stone chip primers
- iii. surfacers
- iv. wash fillers
- v. primer fillers
- vi. plastic adhesion promoters
- vii. elastic primers
- viii. sealers
- ix. spraying polyester fillers

The importance of checking and adjusting paint viscosity and its effect on surface finish

- a. State why the viscosity of a paint is important to application to include:
 - i. build
 - ii. surface finish
 - iii. speed of application
 - iv. describe the procedure for checking viscosity
 - v. describe the effects on viscosity of:
 - vi. temperature
 - vii. additions of thinner/reducer

Filler and foundation material technical data sheets to extract listed information. The importance of correctly interpreting and following manufacturers' instructions and the consequences of failing to do so

- a. Use the process data sheets to determine information such as:
 - i. mixing ratios
 - ii. viscosity
 - iii. number of coats
 - iv. flash off times
 - v. build film thickness
 - vi. spray gun type
 - vii. spray gun set up
 - viii. air pressure requirements
 - ix. substrate requirements
 - x. suitability as a substrate
 - xi. drying times
 - xii. suitability to be applied by methods other than spraying
- b. Define the main information sourced from data sheets to include:
 - i. product identification
 - ii. product description
 - iii. substrate suitability
 - iv. pre-treatment requirement
 - v. mixing ratio
 - vi. pot life
 - vii. method of application
 - viii. spray viscosity
 - ix. nozzle/air cap set up
 - x. number of coats
 - xi. flash off times
 - xii. drying times
 - xiii. recoatability
- c. List common pictograms and state their meaning including those for:
 - i. cleaning information
 - ii. mixing ratios
 - iii. use a measuring stick
 - iv. addition of hardener
 - v. application viscosity

- vi. type of spray gun
- vii. spray coats information
- viii. application with spatula
- ix. application with brush
- x. application with roller
- xi. flash-off
- xii. drying time
- xiii. drying with infrared
- xiv. sanding
- xv. polishing
- xvi. technical data required
- xvii. hand stirring

Masking procedures for part and whole vehicles. Describe masking processes and techniques

- a. List common masking systems, materials and techniques to include:
 - i. masking paper
 - ii. plastic sheeting
 - iii. masking tape
 - iv. foam tape
 - v. wheel covers
 - vi. liquid masking
 - vii. roll-back masking
- b. Identify the characteristics of a quality masking tape to include:
 - i. ability to turn corners
 - ii. non-aggressive adhesive/non-drying
 - iii. clean edges to painted areas
- c. Describe the properties of these masking materials such as:
 - i. economy of use
 - ii. costs per unit
 - iii. absorption
 - iv. flexibility
- d. Identify where and how these masking materials and systems should be used.
- e. Describe the masking procedures for listed items such as:
 - i. door glass and windscreens
 - ii. handles
 - iii. lights
 - iv. mirrors
 - v. wheels
- f. Describe a masking schedule for the type of repair to include:
 - i. time efficiency
 - ii. material costs
 - iii. given protection
- g. Identify faults which are caused by careless masking such as:
 - i. flash lines
 - ii. bridging
 - iii. creep
 - iv. hard edges