Assessment Requirements

Unit PO0912K – Knowledge of Applying Topcoats and Completing Refinishing Operations

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)

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 flatting sludge (straight colour or C O B)
   iv. VIN plate

The main stages required in preparing a vehicle for refinishing, including areas adjacent to the painting area

a. Manufacturers protective coatings and explain their warranty implications such as:
   i. electrostatic dip
   ii. under-body compounds
   iii. cavity wax
   iv. body caulking
b. Vehicles 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
c. The reasons for vehicle masking
d. 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 contaminates

vii. environmental pollution

The procedures used in preparing listed substrates

a. The required preparation for the listed substrates to include:
   i. steel
   ii. aluminium alloys
   iii. GR plastics
   iv. thermo plastics
   v. cured 2k materials
   vi. synthetic enamels
   vii. timber (trim parts only)

b. The procedures for the preparation of plastics to include:
   i. identification
   ii. tempering
   iii. porefilling
   iv. cleaning
   v. adhesion promotion
   vi. elastic primers

The selection and uses of a range of abrasives in common use

a. Types and uses of abrasives materials to include:
   i. aluminium oxide
   ii. silicon carbide
   iii. wet and dry types
   iv. open coat
   v. closed coat
   vi. papers, pastes and woven plastics

b. Forms of abrasive to include:
   i. pad
   ii. disc
   iii. sheet
   iv. roll
   v. backing materials
   vi. methods of attachments

c. How grit sizes are classified according to the FEPA standards using ‘P’ grades with regard to:
   i. the process being carried out
   ii. the material being abraded
   iii. the technique being employed

d. The differences between Open and Closed coat abrasives
   i. open coat
   ii. closed coat
   iii. P grades

The term ‘feather edging’ and why correct operation is required in achieving the required surface finish

a. The procedure for the preparation of a repaired area on a large panel in terms of:
   i. repair edge preparation
   ii. surrounding area
   iii. bare metal

b. Why correct preparation is required with reference to:
   i. surface finish
   ii. film thickness
   iii. sinkage
   iv. mapping
   v. contouring

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

a. 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. 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. The properties of these masking materials such as:
   i. economy of use
   ii. costs per unit
   iii. absorption
   iv. flexibility
d. Where and how these masking materials and systems should be used.
e. The masking procedures for listed items such as:
   i. door glass and windscreens
   ii. handles
   iii. lights
   iv. mirrors
   v. wheels
f. Masking schedule for the type of repair to include:
   i. time efficiency
   ii. material costs
   iii. given protection
g. Faults which are caused by careless masking such as:
   i. flash lines
   ii. bridging
   iii. creep
   iv. hard edges

The factors affecting the choice and use of topcoat materials

a. The types of paints such as:
b. Non convertible
   i. nitro cellulose
   ii. 1k acrylic
c. Convertible
   i. oil based synthetics
   ii. 2 k acrylics
   iii. 2k polyurethane
   iv. polyesters
   v. isocyanate resins
d. Waterborne basecoats
   i. microgel
   ii. latex
e. The reasons for using paint to include:
   i. protection
   ii. filling
   iii. decoration
   iv. identification

v. safety

f. 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

g. 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

h. The problems of over catalysed body filled areas

i. The correct Health and Safety procedures associated with body fillers

j. Aids and techniques which can be used to achieve the correct contour of a filled area

k. Undercoat materials for plastics to include:
   i. adhesion promoters
   ii. surface modifiers
   iii. flexible additives
   iv. texture additives

l. Listed additives such as:
   i. adhesion promoters
   ii. flexible additives
   iii. texture finishes
   iv. extenders
   v. UV absorbers
   vi. flow aids

The properties of topcoat materials

a. The ingredients of paint include:
   i. pigment
   ii. binder/vehicle
   iii. solvent/thinner/reducer
   iv. additives

b. The different types of paints to include:

c. Non convertible:
   i. nitro cellulose
   ii. 1k acrylics
   iii. basecoats

d. Convertibles:
   i. two packs
   ii. oil based synthetic enamels

e. The characteristics and properties of surface coatings to include:
   i. nitro-cellulose- non convertible-low build –fast surface dry
   ii. oil based synthetics-convertible-slow dry through uptake of oxygen
   iii. two packs- convertible- chemical reaction –high build
   iv. base coats- solvent or water borne -non convertible-very low build-high opacity-have to be over coated with a clear coat

f. The principles of operation of water based materials

g. The materials used in water based paint technology
h. The environmental advantages of using water based paints
i. The materials in terms of their:
    i. preparation of substrates
    ii. mixing procedures
    iii. application
    iv. drying processes
    v. working techniques
    vi. covering and hiding power
    vii. rectification
    viii. cleaning process