

Replaces DVS 2222-1 (August 1999) and DVS 2222-1, Supplement (August 1999)

This text is intended for men and women to an equal extent. However, for better readability, it was decided not to use the consistent formulation in the male/female form in the text and only the male form is specified.

This guideline was elaborated in cooperative work by the Association of Technical Inspection Agencies, Essen, and the German Welding Society.

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1 General

The training to become a plastics laminator and adhesive bonder is ongoing vocational training. The course concludes with a qualification test according to the DVS® 2220 guideline.

2 Training bodies

The course to become a plastics laminator and adhesive bonder is staged at the DVS® educational facilities¹⁾ correspondingly authorised for this purpose. The DVS® educational facilities must possess the facilities required for staging the course. In this respect, particular attention must be paid to the regulations relating to health protection and safety at work.

¹⁾ Corresponding to the "Requirements on qualification testing agencies and qualification testers for plastics joining technology" (agreements between DVS and VdTUV). The qualification testing agencies can be requested from the offices of DVS in Düsseldorf and of VdTUV in Essen.

²⁾ One TU corresponds to a period of 50 min.

3 Prerequisites

In order to take part in the course to become a plastics laminator and adhesive bonder, the student must be proficient in the course language so that he can follow the teaching.

The prerequisites for the admission to the qualification test are governed by the DVS® 2220 guideline.

4 Course structure, course duration and curriculum

The course, including the qualification test according to the DVS® 2220 guideline, has a total duration of 80 teaching units²⁾ (TUs). It is structured in the following course parts:

- Part 1: Specialist theory
- Part 2: Specialist practice

5 Qualification test and course certificate

The qualification test is described in the DVS® 2220 guideline. The participation in the course is confirmed by a participation certificate.

This publication was drawn up by a group of experienced experts in cooperative work on an honorary basis and was approved by the "Training and Qualification Testing" working group. It is binding for DVS educational facilities. The user must always check whether the version in his possession is still valid.

DVS, Technical Committee Working Group "Joining of Plastics"
DVS, Education Committee, Working Group: "Training and Qualification Testing"

Part 1: Specialist theory

Chapter	Subject matter for specialist theory	TUs
1	Materials science and fundamentals of the plastics <ul style="list-style-type: none"> thermoplastics, thermoset plastics and elastomers structures, properties and applications 	2.5
2	Resin systems <ul style="list-style-type: none"> unsaturated polyester resins (UP), epoxy resins (EP) and vinyl ester resins (VE) properties and areas of application standard resins and special resins curing systems: hardeners, accelerators and curing course 	3
3	Reinforcing materials <ul style="list-style-type: none"> classification of the reinforcing fibres: glass fibres, carbon fibres and aramid fibres textile semi-finished products properties and areas of application 	2.5
4	Environmental protection and safety at work <ul style="list-style-type: none"> hazards to health and the environment protection measures: technical and personal requirements on the workplace 	1.5
5	Manual lamination of fibre-reinforced plastics (FRPs) <ul style="list-style-type: none"> process description and lamination technique tools, devices and toolmaking utilisation of the gel coat and the top coat fillers, dyes, release and thixotropic agents, solvents and cleaning agents 	6
6	Additional processing methods for FRPs <ul style="list-style-type: none"> fibre resin spraying, pressing technique and centrifugal process infusion and injection processes winding technique and pultrusion 	2
7	Repair procedures and adhesive bonding <ul style="list-style-type: none"> possibilities and application of the repair of components made of FRPs adhesive bonding of GFRP pipes and panels 	3.5
8	Chip-removing machining of FRP components <ul style="list-style-type: none"> tools safety instructions 	2
9	GFRP pipes and pipe joints <ul style="list-style-type: none"> pipe types joining possibilities 	2.5
10	Sandwich structures <ul style="list-style-type: none"> core materials: balsa, honeycombs and foams application and utilisation processing 	2.5
11	Test procedures <ul style="list-style-type: none"> bending and bond shear strengths textile glass proportion, apparent density and Barcol hardness 	1
	Total for specialist theory	29

Part 2: Specialist practice

Chapter	Subject matter for specialist practice	TUs
1	Manufacture of resin mixes <ul style="list-style-type: none"> determination of gel and curing times 	2
2	Lamination exercises <ul style="list-style-type: none"> manufacture of flat laminates manufacture of spherical components manufacture of sandwich structures 	22
3	Joining techniques and repair techniques <ul style="list-style-type: none"> manufacture of laminate joints manufacture of laminate joints between pipes manufacture of adhesive-bonded joints between pipes and fittings repair on flat laminates repair on spherical components 	19
	Total for specialist practice	43

Qualification test:

Chapter	Qualification test according to the DVS® 2220 guideline	TUs
1	Manufacture of Test Piece I.1 Manufacture of Test Piece I.2 Manufacture of Test Piece I.3 or/alternatively Manufacture of Test Piece II.1 Manufacture of Test Piece II.2	4
2	Theoretical qualification test	1
	Total for qualification test according to the DVS® 2220 guideline	5