DVS-PersZert®

DVS[®] course for plastics laminators and adhesive bonders

Guideline DVS[®] 2290

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.

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 $\text{DVS}^{\textcircled{R}}$ 2220 guideline.

4 Course structure, course duration and curriculum

Part 1: Specialist theory Part 2: Specialist practice

5 Qualification test and course certificate

The qualification test is described in the DVS 2220 guicelin The participation in the course is confirmed by a publication of tificate.

¹⁾ Corresponding to the "Requirements on qualification testing agencies and qualification testers for plastics joint in chology, " (agr ments between DVS and VdTÜV). The qualification testing agencies can be requested from the offices of DVS in Düsseldo and or dTÜV in Essen.

 $^{2)}\,$ One TU corresponds to a period of 50 min.

This publication was drawn up by a group of experienced expert Testing" working group. It is binding for DVS educational factors. a coop, tive work on an honorary basis and was approved by the "Training and Qualification to user the laways check whether the version in his possession is still valid.

DVS, Technica Commun. Working Group "Joining of Plastics" DVS, Education Committee, Working Group: "Training and Qualification Testing"

DVS[®] is a registered trademark of D. Deutoner Verband für Schweißen und verwandte Verfahren e.V., Düsseldorf Orders to: DVS Media GmbH, P. O. Box 19 65, 40010 Düsseldorf, Germany, Phone: +49(0)211/1591-0, Telefax: +49(0)211/1591-150

Part 1: Specialist theory

Chapter	Subject matter for specialist theory	TUs
1	Materials science and fundamentals of the	2.5
	thermoplastics, thermoset plastics and	
	elastomers	
0	structures, properties and applications	2
2	unsaturated polyester resins (UP), epoxy	3
	resins (EP) and vinyl ester resins (VE)	
	 standard resins and special resins 	
	 curing systems: hardeners, accelerators and curing course 	
3	Reinforcing materials	2.5
	classification of the reinforcing fibres:	-
	glass fibres, carbon fibres and aramid fibres • textile semi-finished products	
	 properties and areas of application 	
4	Environmental protection and safety at	1.5
	 hazards to health and the environment 	
	protection measures: technical and personal	
5	requirements on the workplace Manual lamination of fibro-roinforcod	6
5	plastics (FRPs)	0
	 process description and lamination 	
	 tools, devices and toolmaking 	
	utilisation of the gel coat and the top coat fillers, dves, release and thisotropic agents	
	solvents and cleaning agents	
6	Additional processing methods for FRPs	2
	 fibre resin spraying, pressing technique and centrifugal process 	
	 Infusion and injection processes 	
7	winding technique and pultrusion	25
1	 possibilities and application of the repair of 	3.5
	components made of FRPs	
	panels	
8	Chip-removing machining of FRP	2
	components • tools	
	safety instructions	
9	GFRP pipes and pipe joints	2.5
	 pipe types joining possibilities 	
10	Sandwich structures	2.5
	 core materials: balsa, honeycombs and facence 	
	 application and utilisation 	
	processing	
11	Test procedures	1
	 textile glass proportion, apparent density 	
	and Barcol hardness	20
L	Total for specialist theory	29

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Part 2: Specialist practice

1 Manufacture of resin mixes 2 • determination of gel and curing times 2 2 Lamination exercises 22 • manufacture of falt laminates • manufacture of sandwich structures 19 3 Joining techniques and repair techniques 19 • manufacture of laminate joints • manufacture of adhesive-bonded joints between pipes and fittings • repair on falt laminates • repair on spherical components • repair on spherical components 13 ualification test • repair on spherical components 43 ualification test • repair on spherical components 14 1 Manufacture of Test Piece I.1 44 Manufacture of Test Piece I.2 1 1 1 Manufacture of Test Piece I.3 1 1 Manufacture of Test Piece I.2 1 2 Theoretical qualification test according to the DVS® 2220 guideline 1 2 Theoretical qualification test according to the DVS® 2220 guideline 1	1 Manufacture of resin mixes 2 2 Lamination exercises 22 imanufacture of flat laminates imanufacture of sandwich structures 19 3 Joining techniques and repair techniques 19 imanufacture of adhesive-bonded joints between pipes 43 ualification test Total for specialist practice 43 ualification test Total for specialist practice 43 ualification test 1 44 1 Manufacture of Test Piece 1.1 44 Manufacture of Test Piece 1.2 1 44 Manufacture of Test Piece 1.2 1 1 VStare 2.20 guideline 1	Chapter	Subject matter for specialist practice	TUs		
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