

Technical Bulletin DVS 2713 Supplement
Welding of titanium materials
Sample images of tempering colours




DVS, Technical Committee, Working Group "Welding in aviation and aerospace engineering"

Error correction: Change in sample image A Permissible tempering colours from RAL 8013 to RAL 5013.





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This supplement serves the assessment of tempering colours resulting from welding of titanium materials. The following sample images allow a comparison between permissible tempering colours (A) and impermissible tempering colours (B) dependent on the formation temperature and the position in the welding seam

A Permissible tempering colours

Welding seam and heat affected zone	Heat affected zone of component parts of safety class II and III	
350 °C	400 °C	450 °C
		
Comparison: RAL 8001	Comparison: RAL 8012	Comparison: RAL 5013

B Impermissible tempering colours

Welding seam and heat treatment zone			
500 °C	550 °C	600 °C	650 °C
			
Comparison: RAL 5012	Comparison: RAL 7014	Comparison: RAL 7015	Comparison: RAL 7016

The shown tempering colours appear at the indicated temperatures in air (alloy: TiCu2).

TIG - weld test specimen with tempering colours (welding seam and HAZ)



Impermissible temper colours

Permissible temper colours in the weld and impermissible temper colours in the HAZ on components in Safety Class I

*) Definition of safety classes see DIN 29595