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SG800-05 Temperature Performance

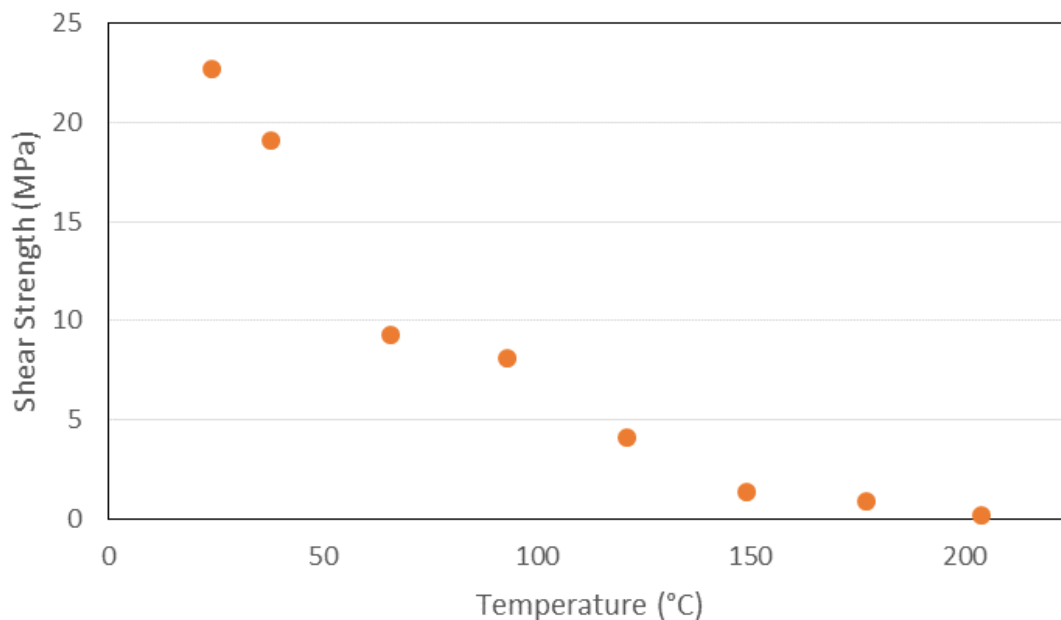
SG800-05 is a two component, 10:1 ratio methacrylate adhesive designed for the bonding of unprepared metals with minimal surface preparation, as well as engineering plastics and composite materials. SG800-05 particular excels in higher temperature environments and has the capability to withstand temperatures in service up to 121°C and higher intermittently.

SG800-05 Shear Strength Performance at Elevated Temperatures

Colled Rolled Steel lap shear samples were bonded with SG800-05 as per ASTM D1002 and after 24 hours cure time, were exposed to temperatures up to 204°C for 1 hour then assessed for shear strength at temperature.

Figure 1 and Table 1 provide an outline of the capability of SG800-05 when exposed to elevated temperatures. At higher temperatures, the strength does decrease and it is crucial that assemblies are properly fixed in place to avoid the joint slipping during the paint bake process.

Figure 1: SG800-05 Shear Strength versus Temperature



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Table 1: SG800-05 Shear Strength versus Temperature Data

Temperature Exposure (°C)	Shear Strength (MPa)	Failure Mode
24	22.7	100% Cohesive
38	19.1	100% Cohesive
66	9.3	100% Cohesive
93	8.1	100% Cohesive
121	4.1	100% Cohesive
149	1.4	100% Adhesive
177	0.9	100% Adhesive
204	0.2	100% Adhesive

SG800-05 Shear Strength Performance after Exposure to Elevated Temperatures

Colled Rolled Steel lap shear samples were bonded with SG800-05 as per ASTM D1002 and after 24 hours cure time, were exposed to temperatures up to 204°C for 1 hour then cooled back to room temperature before being assessed for shear strength.

SG800-05 retains good strength after exposure to temperatures up to 204°C, with the integrity of the bond being unchanged. Full cohesive failure is observed after exposure to temperatures up to 177°C after which the cohesive failure drops to 70% at temperatures up to 204°C.

At higher temperatures, the appearance of the cured adhesive can change in colour, with the adhesive appearing more tanned rather than black. This colour change typically happens due to exposure to higher temperatures during typical painting processes. Whilst there is a colour change, the integrity of the bond remains unchanged.

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Figure 2: SG800-05 Shear Strength versus Temperature Before and After Exposure

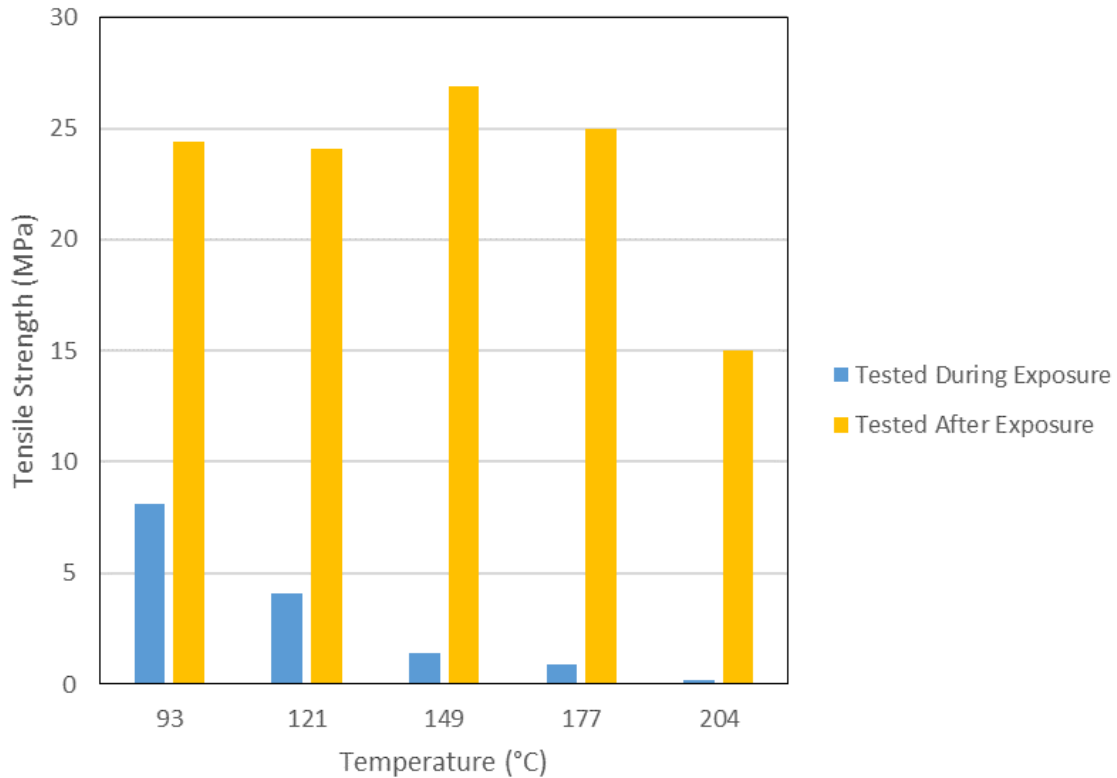


Table 2: SG800-05 Shear Strength after Exposure to Elevated Temperatures

Temperature Exposure (°C)	Shear Strength (MPa)	Failure Mode
93	24.4	100% Cohesive
107	24.8	100% Cohesive
121	24.1	100% Cohesive
135	24.8	100% Cohesive
149	26.9	100% Cohesive
163	24.1	100% Cohesive
177	25.0	100% Cohesive
191	21.6	70% Cohesive / 30% Adhesive
204	15.0	70% Cohesive / 30% Adhesive

Disclaimer

While all Information contained herein are to the best of our knowledge accurate as of the date of this publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE. We suggest that the end user evaluate and validate the information prior to use. In all cases it is the responsibility of the user and NOT of SCIGRIP to determine the suitability of the adhesive and dispensing systems for its own particular purpose and use environment.

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