



Barcelona, 24/11/2023

Asunto: Modificaciones previstas en las formulaciones de LOCTITE® 243 y LOCTITE® 270

Estimados clientes,

Como parte del compromiso de Henkel de mejorar continuamente y en línea con su estrategia de sostenibilidad vamos a mejorar las formulaciones de nuestros populares fijadores de roscas LOCTITE 243 y LOCTITE 270 (los "Productos"). Los Productos se formularán sin hidroperóxido de cumeno ni 1-acetil-2-fenilhidrazina que se sustituirán por materias primas más sostenibles.

Les enviamos esta carta como notificación de los futuros cambios. La transición en nuestras plantas de producción a las fórmulas mejoradas está planificada para noviembre de 2024. Por favor, tengan en cuenta que debido a las existencias internas de seguridad en nuestros almacenes, y en los almacenes de nuestros distribuidores, habrá un período de solapamiento en el que los clientes podrían recibir tanto las nuevas como las antiguas formulaciones. Podrán identificar las nuevas formulaciones por el número de lote en los paquetes. Los números de lote se asignan en el momento de la fabricación y los pueden obtener preguntando a su comercial de LOCTITE, en noviembre de 2024.

Tengan la seguridad de que las nuevas formulaciones han sido sometidas a rigurosas pruebas por parte de Henkel para garantizar que las propiedades fundamentales de rendimiento, vida útil y otros parámetros técnicos de los productos son consistentes con las especificaciones de calidad actuales de Henkel. Los nombres de los productos y sus IDH permanecerán iguales. Las mejoras no afectarán a los Certificados de Análisis aplicables, la nomenclatura de los productos o las fichas de datos técnicos. Todas las Fichas de Datos de Seguridad asociadas se revisarán para reflejar los cambios cuando corresponda.

Sin embargo, como siempre, debido a las diferentes posibilidades de trabajo y aplicaciones, así como a las condiciones que están fuera de nuestro control, no asumimos ninguna responsabilidad por la idoneidad de los productos para sus procesos de producción, así como para sus propósitos de tratamiento y resultados previstos. En su propio interés, les recomendamos que realicen sus propias pruebas previas para confirmar la idoneidad de nuestro producto en su proceso de producción.

Para su referencia, se adjuntan datos de la comparación directa.

Por favor, pónganse en contacto con su comercial de LOCTITE si les surgen preguntas, necesitan muestras o quieren información adicional.

Atentamente,
Henkel Ibérica, S.A.

Nombre: Cristina Rovetti
Category Manager Italy, Greece & Iberica

Casali Massimiliano (Nov 29, 2023 16:25 GMT+1)

Nombre: Massimiliano Casali
Country Manager Italy, Greece & Iberica
General Manufacturing and Maintenance Italia

Customer Information Pack

Introduction of Loctite® 243 Upgrade

September 2023



Introduction

The latest innovation from Loctite® is the reformulation of Loctite® 243 medium strength threadlocker, involving the replacement of APH (1-Acetyl-2-phenylhydrazine) and CHP (Cumene hydroperoxide) with alternative raw materials. This innovation combines a more sustainable formulation with the high quality and reliability for which the Loctite® brand is known.

For several years, Henkel's customers have expressed an increasing interest in sustainability-oriented products and solutions. In response to this growing market trend and as a result of reclassification of some materials within the Loctite® 243 formulation, Henkel has upgraded its top-selling Loctite® anaerobic adhesive by replacing the raw materials APH and CHP with more sustainable alternatives. This has been achieved without compromising on key properties such as cure speed, strength, gap cure, temperature resistance and shelf-life.

The data reported within this Information Pack supports the conclusion that the replacement of APH and CHP with the alternative raw materials has been achieved without compromise to the quality and performance properties expected for Loctite® 243.

This Information Pack provides a head-to-head performance comparison of the current Loctite® 243 formulation vs the new Loctite® 243 formulation, referenced in the following pages as "Loctite® 243 Current" and "Loctite® 243 New", respectively.

Maintained Loctite® Material Specification

Loctite® Material Specification (LMS) for Loctite® 243 remains unchanged.

The table below shows the test results of Loctite® 243 Current versus a batch of Loctite® 243 New. The results are comparable.

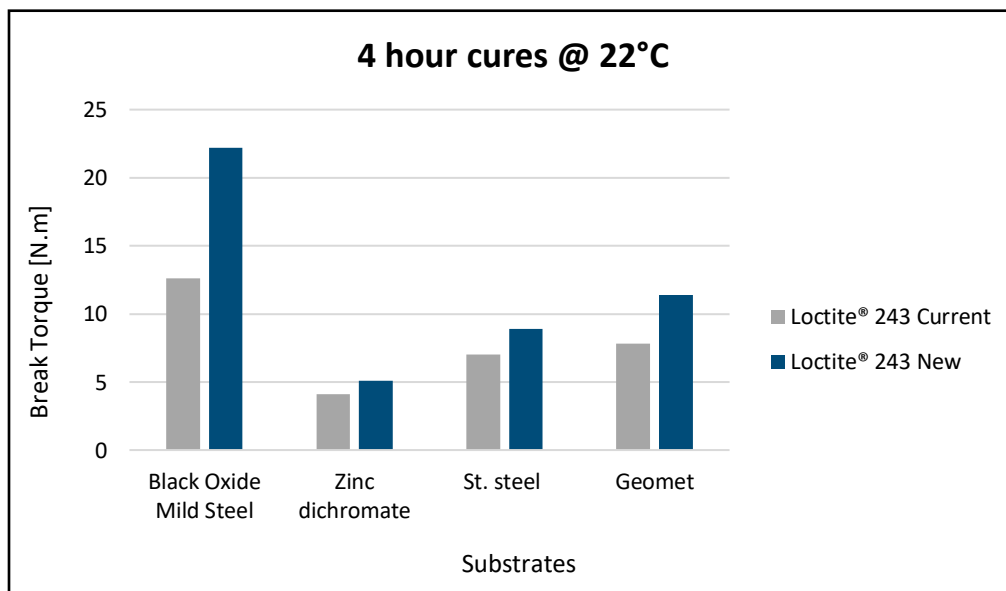
Parameter	Specification	Unit	Loctite® 243 Current	Loctite® 243 New
Appearance	Blue liquid		Blue liquid	Blue liquid
Fluorescence (under UV light)	Positive		Positive	Positive
Brookfield viscosity (RVT, spindle no: 3, 25°C, 20 RPM)	1300 - 3000	mPa·s	2200	2295
Shear strength (steel pins and collars, 24h cure at RT)	>= 7.6	N/mm ² (MPa)	14	16

Head-to-head performance evaluation

Performance evaluation is based on the pilot plant batches of Loctite® 243 Current vs. Loctite® 243 New. Values quoted are average values.

Cure performance: Speed

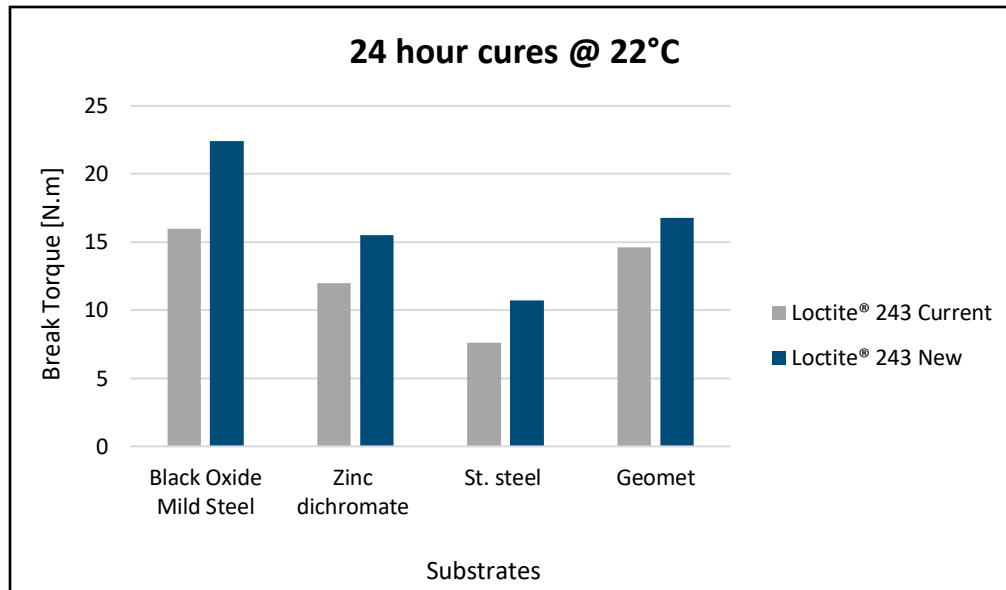
The graph below shows the breakaway torque strength of Loctite® 243 Current vs. Loctite® 243 New after 4 hours on various nut and bolt substrates.



Conclusion: Robust cure performance is observed for Loctite® 243 Current and Loctite® 243 New on all substrates tested.

Cure performance: Strength

The graph below shows the breakaway torque strength of Loctite® 243 Current and Loctite® 243 New after 24 hours on various nut and bolt substrates.



Conclusion: Overall comparable strength observed for Loctite® 243 Current and Loctite® 243 New.

Typical performance of cured material

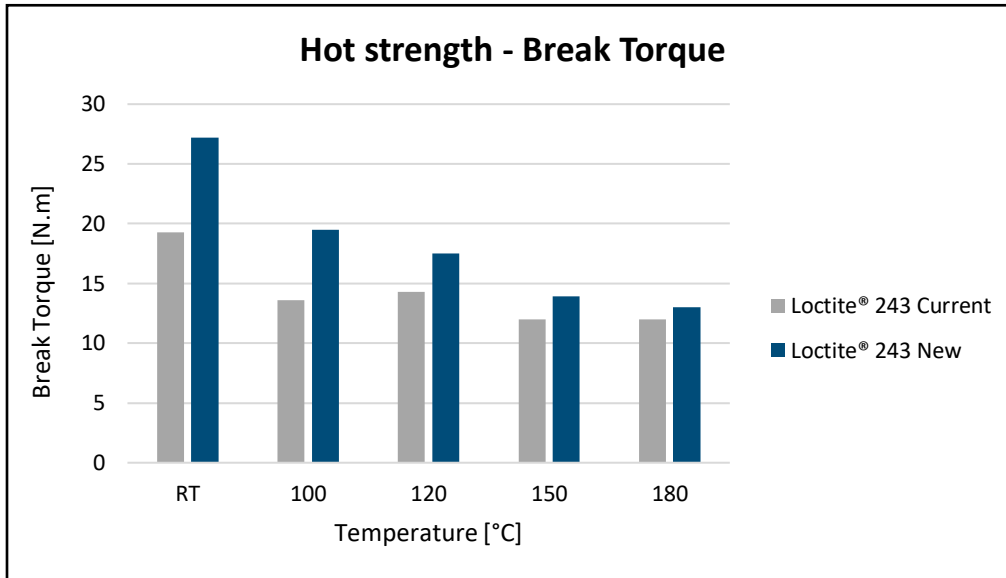
Target: Maintain characteristic medium strength properties on standard substrates, e.g., black oxide steel and mild steel.

Parameter	Substrate	Unit	Loctite® 243 Current	Loctite® 243 New
Breakaway torque (Cured for 24h @ 22°C)	M10 mild steel nuts and black oxide steel bolts	N·m	16	22
Prevail torque @ 180° (Cured for 24h @ 22°C)	M10 mild steel nuts and black oxide steel bolts	N·m	3	3
Shear strength (Cured for 24h @ 22°C)	Steel pins and collars	N/mm ² (MPa)	14	16

Conclusion: The key strength properties of Loctite® 243 are maintained. The results can be considered equivalent within the limits of experimental variations.

Thermal performance: Hot strength

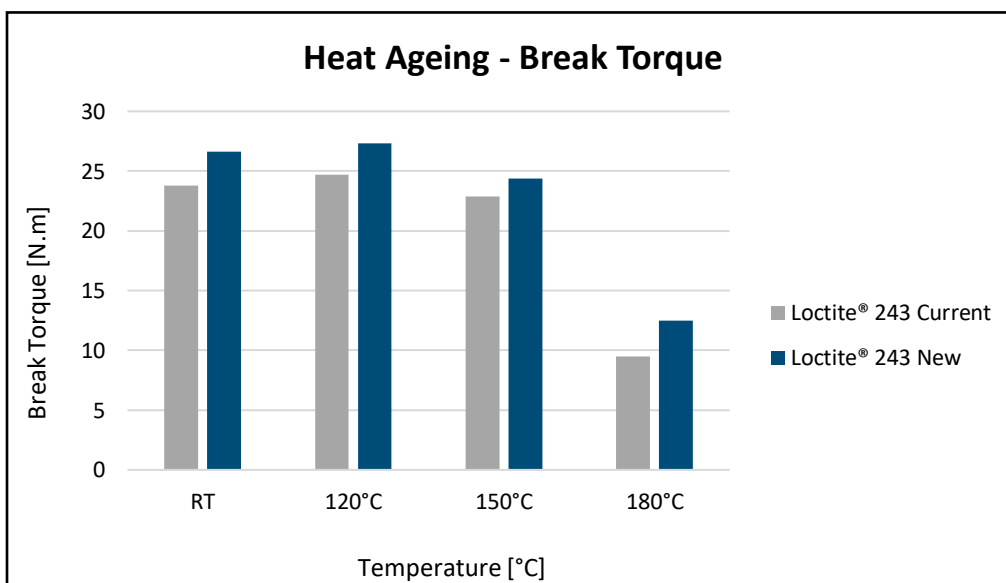
M10 zinc phosphate steel nuts and bolts, pre-torqued to 5 N·m, cured for 1 week at a temperature of 22°C. Breakloose torque tested at temperature.



Conclusion: Hot strength performance maintained up to 180°C.

Thermal performance: Heat aging

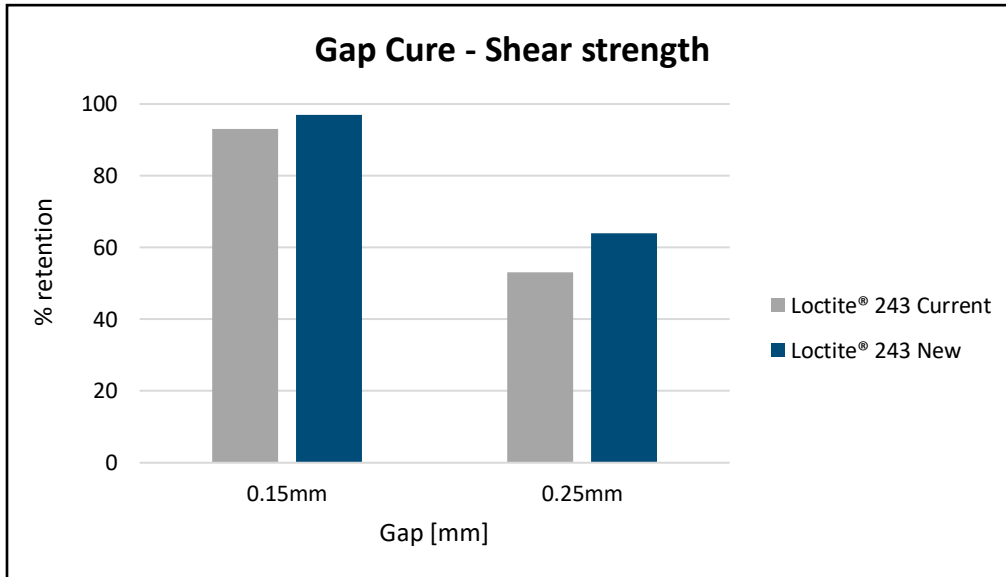
M10 zinc phosphate steel nuts and bolts, pre-torqued to 5 N·m, cured for 1 week at a temperature of 22°C. Assembled parts are stored at temperatures stated for 1000 hours and tested at 22°C.



Conclusion: Heat resistance maintained up to 180°C.

Gap cure

Mild steel pins and collars cured for 72 hours at a temperature of 22°C. Tested gap sizes were 0.05mm (zero gap), 0.15mm and 0.25mm. The graph below shows the gapped pins and collars as a percentage of initial strength 'zero gap' pins and collars (percentage retention).



Conclusion: Gap cure performance maintained.

Conclusion:

Loctite® 243 has been successfully upgraded without any compromise to the current LMS specifications.

Note:

The information provided in this document including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this document. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in this document or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this document including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this document. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in this document or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Customer Information Pack

Introduction of Loctite® 270 Upgrade

September 2023



Introduction

The latest innovation from Loctite® is the reformulation of Loctite® 270 high strength threadlocker, involving the replacement of APH (1-Acetyl-2-phenylhydrazine) and CHP (Cumene hydroperoxide) with alternative raw materials. This innovation combines a more sustainable formulation with the high quality and reliability for which the Loctite® brand is known.

For several years, Henkel's customers have expressed an increasing interest in sustainability-oriented products and solutions. In response to this growing market trend and as a result of reclassification of some materials within the Loctite® 270 formulation, Henkel has upgraded Loctite® 270 by replacing the raw materials APH and CHP with more sustainable alternatives. This has been achieved without compromising the key properties such as cure speed, strength, gap cure, temperature resistance and shelf-life.

The data reported within this Information Pack supports the conclusion that the replacement of APH and CHP with the alternative raw materials has been achieved without compromise to the quality and performance properties expected for Loctite® 270.

This Information Pack provides a head-to-head performance comparison of the current Loctite® 270 formulation vs the new Loctite® 270 formulation, referenced in the following pages as "Loctite® 270 Current" and "Loctite® 270 New", respectively.

Maintained Loctite® Material Specification

Loctite® Material Specification (LMS) for Loctite® 270 remains unchanged.

The table below shows the test results of Loctite® 270 Current versus a batch of Loctite® 270 New. The results are comparable.

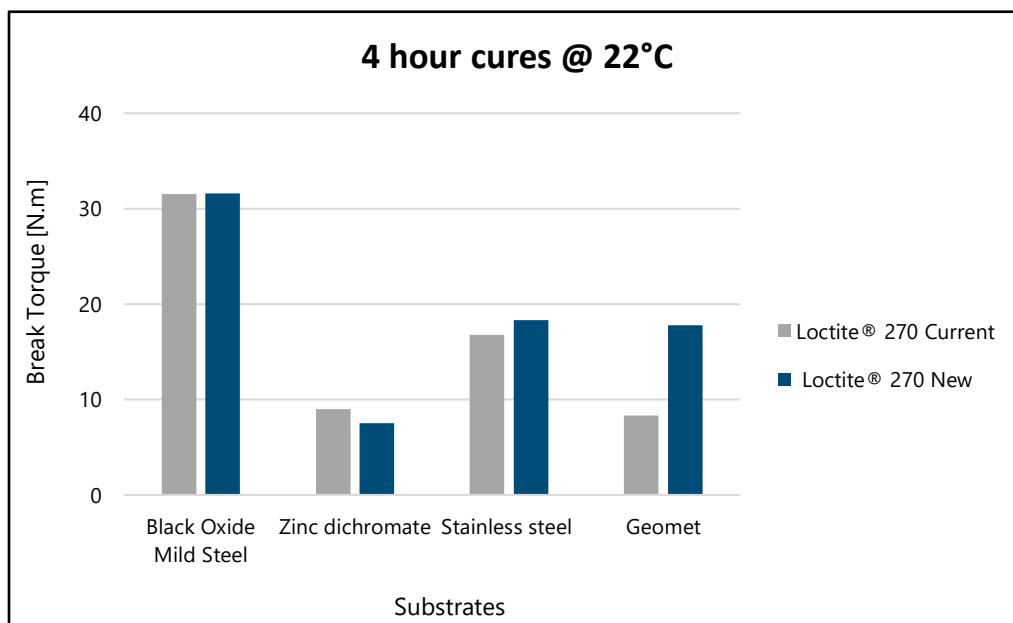
Parameter	Specification	Unit	Loctite® 270 Current	Loctite® 270 New
Appearance	Green liquid		Green liquid	Green liquid
Fluorescence (under UV light)	Positive		Positive	Positive
Brookfield viscosity (RVT, spindle no: 2, 25°C, 20 RPM)	400-600	mPa·s	532	504
Shear strength (Steel pins and collars, 24h cure at RT)	>= 9	N/mm ² (MPa)	25	23

Head-to-head performance evaluation

Performance evaluation is based on the pilot plant batches of Loctite® 270 Current vs. Loctite® 270 New. Values quoted are average values.

Cure performance: Speed

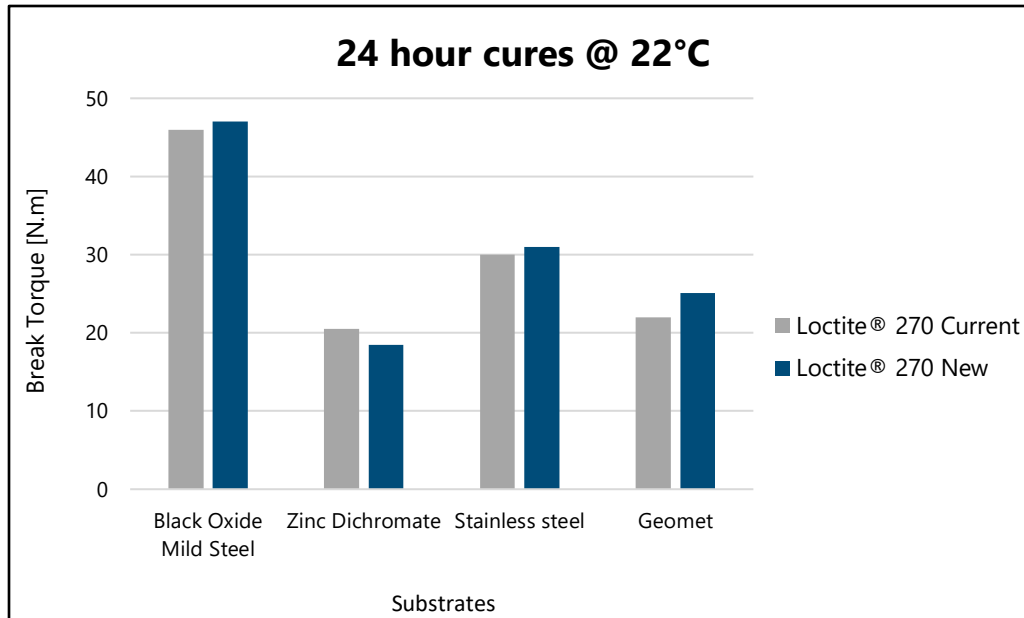
The graph below shows the breakaway torque strength of Loctite® 270 Current vs. Loctite® 270 New after 4 hours on various nut and bolt substrates.



Conclusion: Consistent cure performance is observed for Loctite® 270 Current and Loctite® 270 New on all substrates tested.

Cure performance: Strength

The graph below shows the breakaway torque strength of Loctite® 270 Current and Loctite® 270 New after 24 hours on various nut and bolt substrates.



Conclusion: Overall comparable strength observed for Loctite® 270 Current and Loctite® 270 New.

Typical performance of cured material

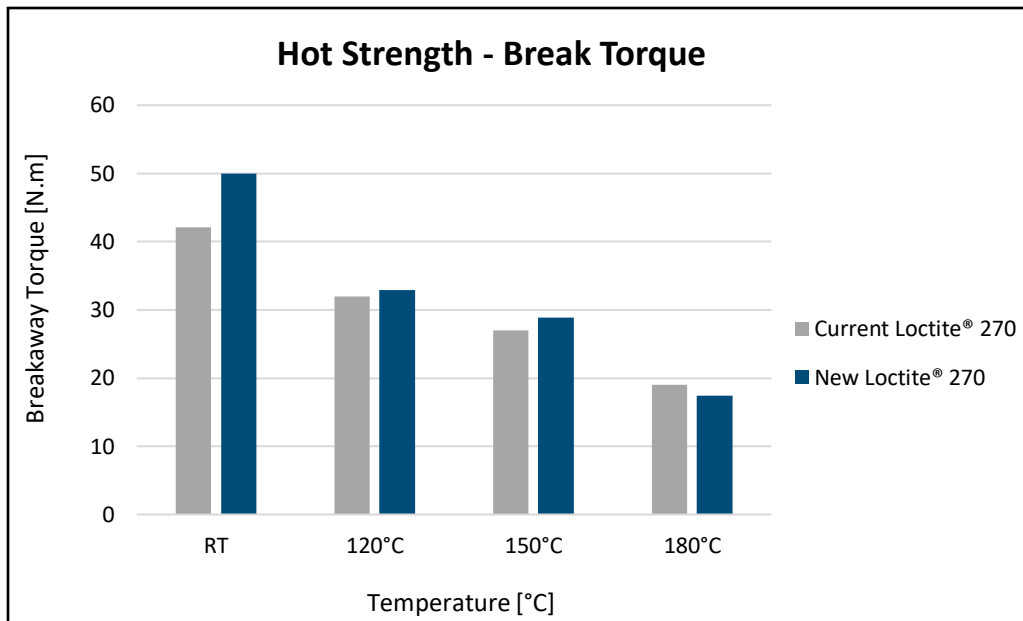
Target: Maintain characteristic high strength properties on standard substrates, e.g., black oxide steel and mild steel.

Parameter	Substrate	Unit	Loctite® 270 Current	Loctite® 270 New
Breakaway torque (Cured for 24h @ 22°C)	M10 mild steel nuts and black oxide steel bolts	N·m	45	47
Prevail torque @ 180° (Cured for 24h @ 22°C)	M10 mild steel nuts and black oxide steel bolts	N·m	34	38
Shear strength (Cured for 24h @ 22°C)	Steel pins and collars	N/mm ² (MPa)	25	23

Conclusion: The key strength properties of Loctite® 270 are maintained. The results can be considered equivalent within the limits of experimental variations.

Thermal performance: Hot strength

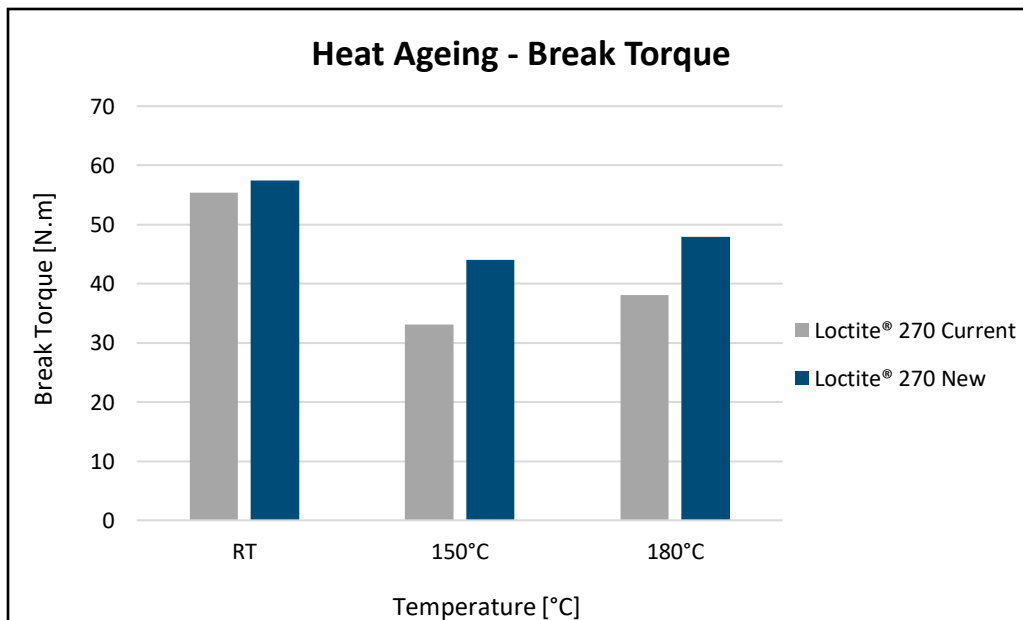
M10 zinc phosphate steel nuts and bolts, pre-torqued to 5 N·m, cured for 1 week at a temperature of 22°C. Breakloose torque tested at temperature.



Conclusion: Hot strength performance maintained up to 180°C.

Thermal performance: Heat ageing

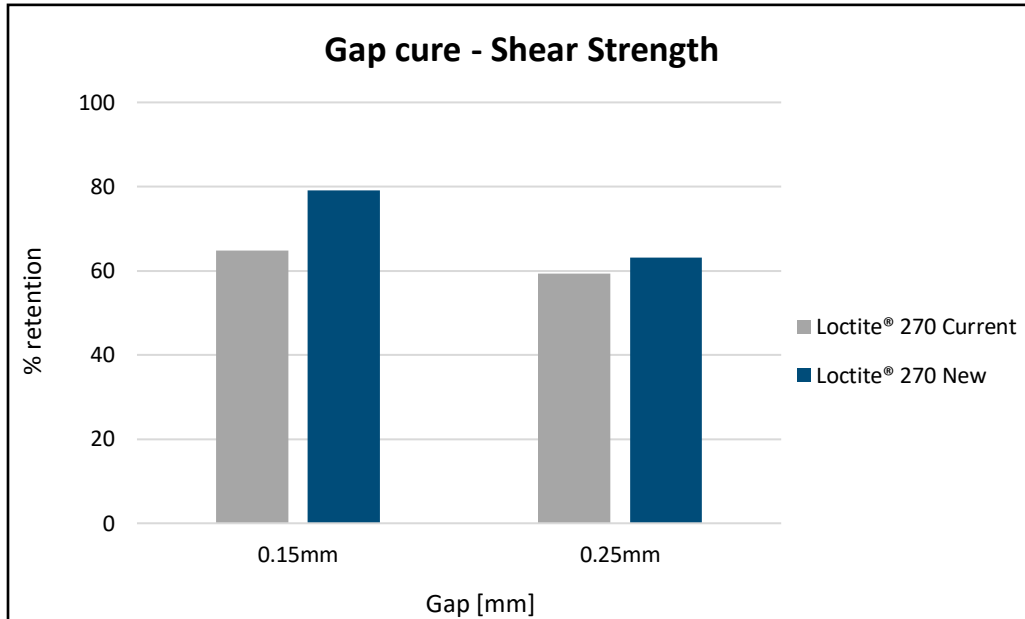
M10 zinc phosphate steel nuts and bolts, pre-torqued to 5 N·m, cured for 1 week at a temperature of 22 °C. Assembled parts are stored at temperatures stated for 500 hours and tested at 22 °C.



Conclusion: Heat resistance is maintained up to 180°C.

Gap cure

Mild steel pins and collars cured for 72 hours at a temperature of 22°C. Tested gap sizes were 0.05mm (zero gap), 0.15mm and 0.25mm. The graph below shows the gapped pins and collars as a percentage of initial strength 'zero gap' pins and collars (percentage retention).



Conclusion: Gap cure performance has been maintained.

Conclusion:

Loctite® 270 has been successfully upgraded without any compromise to the current LMS specifications.

Note:

The information provided in this document including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this document. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in this document or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this document including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this document. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in this document or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.







ES_CustomerLetter_243 270_24nov23

Final Audit Report

2023-11-29

Created:	2023-11-29
By:	Cristina Rovetti (CRISTINA.ROVETTI@HENKEL.COM)
Status:	Signed
Transaction ID:	CBJCHBCAABAACDCVaoLSGylpGMECgxWSYINsVm8qRfE

"ES_CustomerLetter_243 270_24nov23" History

-  Document created by Cristina Rovetti (CRISTINA.ROVETTI@HENKEL.COM)
2023-11-29 - 11:51:11 AM GMT
-  Document emailed to massimiliano.casali@henkel.com for signature
2023-11-29 - 11:51:27 AM GMT
-  Email viewed by massimiliano.casali@henkel.com
2023-11-29 - 3:25:02 PM GMT
-  Signer massimiliano.casali@henkel.com entered name at signing as Casali Massimiliano
2023-11-29 - 3:25:33 PM GMT
-  Document e-signed by Casali Massimiliano (massimiliano.casali@henkel.com)
Signature Date: 2023-11-29 - 3:25:35 PM GMT - Time Source: server
-  Agreement completed.
2023-11-29 - 3:25:35 PM GMT