



Penetrant Professor Approved

Product Data Sheet E-59 Remover

1
10/2015



Met-L-Chek Company manufactures a complete line of cleaner/removers used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. All Met-L-Chek Company cleaner/removers are qualified to **AMS-2644** and are sold under the **Met-L-Chek®** and **Pen-Chek®** trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

E-59 is a class 2 (non-halogenated), Method C inspection penetrant remover. It is designed for use in the solvent wipe technique for penetrant inspection in general metalworking, welding, nuclear and automotive applications. It is a slow dry rate material and is ideal for penetrant wipe removal. **E-59** is **not** used as a pre-inspection surface cleaner. As a penetrant remover it is sprayed onto wiping media and then the penetrant wiped from the surface. The remover should not be sprayed directly on to the test surface to remove the excess penetrant as the sensitivity will be impaired.

E-59 is listed on the Qualified Products List for **AMS-2644**. It meets the requirements of **AMS-2647**, **ASME Boiler and Pressure Vessel Code Section V**, **ASTM E-165**, **ASTM E-1417**, and **ISO- 3452** for penetrant inspection materials. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in aerospace, medical and nuclear components.

E-59 contains combustible solvents and should not be used around open flames or sparks.

Guide to METHOD “C” wipe off processing per **ASTM E-1417**

1. Part must be clean, dry and at a temperature of 4.4° - 52°C (40° - 125°F) before penetrant is applied.
2. Apply penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4° - 10°C (40-50°F).
4. Moisten cloth with remover and wipe penetrant from surface. **Do not** spray remover on surface to remove penetrant, as sensitivity will be impaired.
5. Apply nonaqueous developer **D-70**, by spraying.
6. Wait a minimum of 10 minutes before inspection.
7. For fluorescent **Type 1** penetrants use UV-A illumination of $>1000 \mu\text{w}/\text{cm}^2$ @ 15 inches (38.1 cm) in a darkened area of $<21 \text{ lux}$ visible light (<2 footcandles). For visible **Type 2** penetrants use lighting of 1100 lux/m² (100 footcandles) minimum.



Apply **E-59** to cloth to wipe remove surface penetrant.



Visible penetrant indications of porosity on weld and stress cracks on metal clamp.



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Product Data Sheet

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E-59 Remover

Typical Physical Properties

Form: clear liquid
Density: 780 g/L
Flash Point: > 62.2°C (>144°F)
Viscosity 1.7 mm²/s
Fluorescence: none
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Residue: < 0.005 g/100 ml
Chloride content: < 50 ppm (0.005%)
Fluoride content: < 50 ppm (0.005%)
Sulfur content: < 50 ppm (0.005%)
Mercury: none
VOC's: 780 g/L
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 5 years
from date of batch approval.

Specifications

AMS-2644
ASME B & PV code sec V
ASTM E-165
ISO-3452

AMS-2647
ASTM E-1417

Product Availability

12 x 16oz (400ml) vol. aerosol (net wt 310g or 10.9oz)
1 gallon (3.7L) metal can
5 gallon (18.9L) metal pail



GHS Information



Danger

GHS Hazard Statements:

H227: Combustible liquid.
***H229:** Pressurized container: may burst if heated.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H336: May cause drowsiness or dizziness.

GHS Precautionary statements:

P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P261: Avoid breathing fumes/gas/mist/vapors/spray.
P280: Wear protective glove/clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection.
***P410:** Protect from sunlight.
***P412:** Do not expose to temperatures exceeding 50°C/122°F



GHS response statements:

IF INHALED: Remove person to fresh air and keep comfortable for breathing, get medical advice/attention if you feel unwell.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easily to do. Continue rinsing, get medical attention.
IF SWALLOWED: Immediately call a poison center/doctor/physician. Do Not induce vomiting.
IF ON CLOTHING: Take off contaminated clothing and wash it before reuse.

Transport:

Bulk - Not regulated
Aerosol: DOT- Limited Quantity.
Aerosol: IATA- UN 1950 ,Aerosol, flammable, class 2.1,

* Specific to aerosol cans

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Product Data Sheet E-59A Cleaner/Remover

1
10/2015



Met-L-Chek Company manufactures a complete line of cleaner/removers used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. All Met-L-Chek Company cleaner/removers are qualified to **AMS-2644** and are sold under the **Met-L-Chek®** and **Pen-Chek®** trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

E-59A is a class 2 (non-halogenated), Method C inspection penetrant remover. It is designed for use in the solvent wipe technique for penetrant inspection in general metalworking, welding, nuclear and automotive applications. It is a moderate dry rate material and is ideal for penetrant wipe removal and pre-inspection surface cleaning. As a pre-cleaner it is sprayed directly on the test surface. As a penetrant remover it is sprayed onto wiping media and then the penetrant wiped from the surface. The remover should not be sprayed directly on to the test surface to remove the excess penetrant as the sensitivity will be impaired.

E-59A is listed on the Qualified Products List for **AMS-2644**. It meets the requirements of **AMS-2647**, **ASME Boiler and Pressure Vessel Code Section V**, **ASTM E-165**, **ASTM E-1417**, and **ISO- 3452** for penetrant inspection materials. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in aerospace, medical and nuclear components.

E-59A contains flammable solvents and should not be used in confined spaces or near open flames or sparks.

Guide to METHOD "C" wipe off processing per **ASTM E-1417**

1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Moisten cloth with remover and wipe penetrant from surface. **Do not** spray remover on surface to remove penetrant, as sensitivity will be impaired.
5. Apply nonaqueous developer **D-70**, by spraying.
6. Wait a minimum of 10 minutes before inspection.
7. For fluorescent **Type 1** penetrants use UV-A illumination of >1000 µw/cm² @ 15 inches (38.1 cm) in a darkened area of <21 lux visible light (<2 footcandles). For visible **Type 2** penetrants use lighting of 1100 lux/m² (100 footcandles) minimum.



**E-59A used as a pre-cleaner
spray directly on test
surface and wipe clean.**



**E-59A used as a
penetrant remover.
Spray on wiping media,
and wipe remove
penetrant.**





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Product Data Sheet
E-59A
Cleaner/Remover

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Typical Physical Properties

Form: clear liquid
Density: 743 g/L (6.2 lb/gal)
Flash Point: >12.7°C (>55°F)
Fluorescence: none
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Residue: < 0.005 g/100 ml
Chloride content: < 50 ppm (< 0.005%)
Fluoride content: < 50 ppm (< 0.005%)
Sulfur content: < 50 ppm (< 0.005%)
Mercury: none
VOC's: 743 g/L
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 5 years
from date of batch approval.

Specifications

AMS-2644E AMS-2647C
ASME B & PV code 07 sec V
ASTM E-165 ASTM E-1417
ISO-3452-2005
NAVSEA-T9074-AS-GIB-010/271
RCC-M rev 2000

NSN #'s

1 gallon can 6850-00-357-7926

Product Availability

12 x 16oz (400ml) vol. aerosol (net wt 300g or 10.5oz)
1 gallon (3.7L) metal can
5 gallon (18.9L) metal pail
55 gallon (208L) metal drum



GHS Information

Danger



GHS: Hazard Statements:

H225: Highly flammable liquid and vapor.
***H229:** Pressurized container: may burst if heated.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness



GHS Precautionary Statements:

P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P261: Avoid breathing fumes/gas/mist/vapors/spray.
P280: Wear protective glove/clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection
***P410:** Protect from sunlight.
***P412:** Do not expose to temperatures exceeding 50°C/122°F



* Specific to aerosol cans

GHS Response Statements:

IF INHALED: Remove person to fresh air and keep comfortable for breathing, get medical advice/attention if you feel unwell.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easily to do. Continue rinsing, get medical attention.
IF SWALLOWED: Immediately call a poison center/doctor/physician. Do Not induce vomiting.
IF ON CLOTHING: Take off contaminated clothing and wash before reuse.

Transport:

Bulk - UN 1268, Petroleum distillates, n.o.s. (naphtha) class 3, packing group II.
Aerosol: DOT- Limited Quantity.
Aerosol: IATA- UN 1950 ,Aerosol, flammable, class 2.1,

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Penetrant Professor Approved

Product Data Sheet

R-502 High Temperature Penetrant Remover

1
10/2015



Met-L-Chek Company manufactures a complete line of removers used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. Met-L-Chek Company high temperature remover, **R-502**, is qualified to **Mil-I-25135** as a special application remover and is sold under the **Met-L-Chek®** and **Pen-Chek®** trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

R-502 is a special application high temperature inspection penetrant remover used as a Method C remover. It is used with high temperature visible penetrant **VP-302**. The use range is **51.6 °C - 176.6 °C (125°F -350°F)**. **R-502** is applied to a cloth and used to wipe remove the penetrant from the inspection surface. On smooth surfaces the penetrant may wipe off readily, but on rougher surfaces the use of the remover helps to reduce the background color. This makes the actual flaw indications easier to see.

R-502 is listed on the approved products list for **Mil-I-25135C**. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in nuclear components.

R-502 finds wide use in field weld and weld repair inspection. It is used in the inspection of refinery processing equipment that is at elevated temperatures, speeding up the inspection process time by eliminating the cool down required for standard penetrant processing.

Protective gloves should be worn while working on hot surfaces to avoid burns.

Guide to METHOD "C" wipe off processing

1. Part must be clean, dry and at a temperature of 52°-177°C (125°- 350°F) before penetrant is applied. Test surface temperature by applying a small drop of penetrant on the part surface. If the color turns brown to black in a minute the surface is too hot to inspect. Allow to cool until red color persists.

2. Apply **VP-302** penetrant using spray or wipe on.

3. Wait a minimum of 1-5 minutes for penetrant to thin and enter flaws.

4. Using **R-502** high temperature remover on wiping media, wipe off surface penetrant.

5. Spray on thin even film of **D-702** high temperature developer.

6. Wait a minimum of 1-5 minutes before inspection. On higher temperature surfaces color may begin to fade with prolonged time. Use illumination of >1100 lux/m² (>100 foot candles) to inspect.



R-502 high temperature penetrant remover



High temperature penetrant **VP-302** crack indication on **D-702** developer film.



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Product Data Sheet

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R-502 High Temperature Penetrant Remover

Typical Physical Properties

Form: Clear viscous liquid
Density: 1002g/L
Flash Point: > 93.3°C (> 200°F)
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Chloride content: < 200 ppm (0.02%)
Fluoride content: < 50 ppm (0.005%)
Sulfur content: < 200 ppm (0.02%)
Mercury: none
VOC's: 0g/L
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 3 years
from date of batch approval.

Specifications

ASME B & PV code sec V ASTM E-165
ASTM E-1417 ISO-3452
Mil-I-25135C, Interim AM-4
NAVSEA-250-1500-1, Rev17, ACN-5

Product Availability

1 pint (0.47L) metal can with dauber
1 gallon (3.7L) plastic jug
5 gallon (18.9L) plastic jug



GHS Information



Danger

GHS: Hazard Statements:

H315: Causes skin irritation.
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

GHS Precautionary Statements:

P102: Keep out of reach of children.
P261: Avoid breathing fumes/gas/mist/vapors/spray.
P264: Wash skin thoroughly after handling.
P271: Use only outdoors or in well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective glove/clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection



GHS Response Statements:

IF INHALED: Remove person to fresh air and keep comfortable for breathing, get medical advice/attention if you feel unwell.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easily to do. Continue rinsing, get medical attention.
IF SWALLOWED: Immediately call a poison center/doctor/physician. Do Not induce vomiting
IF ON CLOTHING: Take off contaminated clothing and wash before reuse.

Transport:

DOT- not regulated < 450 L or 119 Gal containers
IATA- not regulated
IMDG- not regulated

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Product Data Sheet R-503 Cleaner/Remover

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10/2015



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R-503 is a class 2 (non-halogenated), Method C inspection penetrant remover. It is designed for use in the solvent wipe technique for penetrant inspection in general metalworking, welding, nuclear and aerospace applications. It is a moderate dry rate material and is ideal for penetrant wipe removal and pre-inspection surface cleaning. As a pre-cleaner it is sprayed directly on the test surface. As a penetrant remover it is sprayed onto wiping media and then the penetrant wiped from the surface. The remover should not be sprayed directly on to the test surface to remove the excess penetrant as the sensitivity will be impaired.

R-503 is listed on the Qualified Products List for **AMS-2644**. It meets the requirements of **AMS-2647**, **ASME Boiler and Pressure Vessel Code Section V**, **ASTM E-165**, **ASTM E-1417**, **ISO- 3452**, and **Pratt & Whitney PMC #9094** for penetrant inspection materials. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in aerospace, medical and nuclear components.

R-503 is ideal for storing penetrant test panels in. The spray tube supplied with the aerosols is an effective way to clean out the star burst cracks on TAM panels.

R-503 is free of petroleum solvents. **R-503** is flammable and should not be used in confined spaces or near open flames or sparks.

Guide to METHOD "C" wipe off processing per **ASTM E-1417**

1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°- 125°F) before penetrant is applied.
2. Apply penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Moisten cloth with remover and wipe penetrant from surface. **Do not** spray remover on surface to remove penetrant, as sensitivity will be impaired.
5. Apply non aqueous developer **D-70**, by spraying.
6. Wait a minimum of 10 minutes before inspection.
7. For fluorescent **Type 1** penetrants use UV-A illumination of >1000 µw/cm² @ 15inches (38.1 cm) in a darkened area of <21 lux visible light (<2 footcandles). For visible **Type 2** penetrants use lighting of 1100 lux/m² (100 footcandles) minimum.



Cleaning Star Burst test panel

Visible penetrant indications
using Method C



Fluorescent penetrant
indications
using Method C



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Product Data Sheet

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R-503 Cleaner/Remover

Typical Physical Properties

Form: clear liquid
Density: 786 g/L
Flash Point: >11.6°C (>53°F)
Fluorescence: none
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Residue: < 0.005 g/100 ml
Chloride content: < 50 ppm (< 0.005%)
Fluoride content: < 50 ppm (< 0.005%)
Sulfur content: < 50 ppm (< 0.005%)
Mercury: none
VOC's: 786 g/L
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 5 years
from date of batch approval.

Specifications

AMS-2644 AMS-2647
ASME B & PV code Sec V ASTM E-165
ASTM E-1417 ISO-3452
NAVSEA-T9074-AS-GIB-010/271
P & W PMC #9094 RCC-M rev 2000

Product Availability

12 x 16oz (400ml) vol. aerosol (net wt 300g or 10.5oz)
1 gallon (3.7L) metal can
5 gallon (18.9L) metal pail



GHS Information



Danger

GHS: Hazard Statements:

H225: Highly flammable liquid and vapor.
***H229:** Pressurized container: may burst if heated.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness

GHS Precautionary Statements:

P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P261: Avoid breathing fumes/gas/mist/vapors/spray.
P280: Wear protective glove/clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection
***P410:** Protect from sunlight.
***P412:** Do not expose to temperatures exceeding 50°C/122°F
*** Specific to aerosol cans**



GHS Response Statements:

IF INHALED: Remove person to fresh air and keep comfortable for breathing, get medical advice/attention if you feel unwell.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easily to do. Continue rinsing, get medical attention.
IF SWALLOWED: Rinse mouth, Do Not induce vomiting, get medical attention if feeling unwell.
IF ON CLOTHING: Take off contaminated clothing and wash before reuse.

Transport:

Bulk - UN 1219, Isopropanol, class 3, packing group II, .
Aerosol: DOT- Limited Quantity.
Aerosol: IATA- UN 1950 ,Aerosol, flammable, class 2.1,

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Penetrant Professor Approved

Product Data Sheet **R-504** **Cleaner/Remover**

1
10/2015



Met-L-Chek Company manufactures a complete line of solvent cleaners/removers used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. All Met-L-Chek Company cleaner/removers are qualified to **AMS-2644** and are sold under the **Met-L-Chek®** and **Pen-Chek®** trademarks. Met-L-Chek Company products are manufactured under license in The Netherlands by NDT Europa.

R-504 is a class 2 (non-halogenated), Method C inspection penetrant remover. It is designed for use in the solvent wipe technique for penetrant inspection in general metalworking, welding, nuclear and aerospace applications. It is a flash dry rate material and as such is ideal for penetrant wipe removal, especially for the verification of indications. A cotton swab is moistened with **R-504** and suspected indications are lightly wiped from the surface. The inspector can evaluate the indication by the rate of penetrant bleed back. The rapid drying of **R-504** is ideal for this application as it does not blur the indication. The aerosol comes with a spray tube that facilitates pin point application which is ideal for cleaning the star indications on TAM panels. As a pre-cleaner it is sprayed directly on the test surface. As a penetrant remover it is sprayed onto wiping media and then the penetrant wiped from the surface. The remover should not be sprayed directly on to the test surface to remove the excess penetrant as the sensitivity will be impaired.

R-504 is listed on the Qualified Products List for **AMS-2644**. It meets the requirements of **AMS-2647**, **ASME Boiler and Pressure Vessel Code Section V**, **ASTM E-165**, **ASTM E-1417**, **ISO- 3452-2005**, and **Pratt & Whitney PMC #9008** for penetrant inspection materials. It is low in Sulfur, Chlorine, Fluorine and other Halogens, making it safe for use on Titanium and high Nickel alloys found in aerospace, medical and nuclear components.

R-504 is ideal for storing penetrant test panels in. The spray tube supplied with the aerosols is an effective way to clean out the star bust cracks on TAM panels.

R-504 is a phenol free solvent. **R-504** is flammable and should not be used in confined spaces or near open flames or sparks.

Guide to METHOD "C" wipe off processing per **ASTM E-1417**

1. Part must be clean, dry and at a temperature of 4.4°-52°C (40°-125°F) before penetrant is applied.
2. Apply penetrant using spray, immersion, or wipe on.
3. Wait a minimum of 10 minutes; 20 minutes if temperature is 4.4°-10°C (40-50°F).
4. Moisten cloth with remover and wipe penetrant from surface. **Do not** spray remover on surface to remove penetrant, as sensitivity will be impaired.
5. Apply non aqueous developer **D-70**, by spraying.
6. Wait a minimum of 10 minutes before inspection.
7. For fluorescent **Type 1** penetrants use UV-A illumination of >1000 µw/cm² @ 15inches (38.1 cm) in a darkened area of <21 lux visible light (<2 footcandles). For visible **Type 2** penetrants use lighting of 1100 lux/m2 (100 footcandles) minimum.



R-504 being sprayed on cotton swab, which is used to wipe fluorescent indications. Inspector will evaluate severity of flaw indication by rate of fluorescent bleed back.





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Product Data Sheet

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10/2015

R-504 Cleaner/Remover

Typical Physical Properties

Form: clear liquid
Density: 791 g/L
Flash Point: $>-20^{\circ}\text{C}$ ($>-4^{\circ}\text{F}$)
Fluorescence: none
Corrosion of aluminum: none
Corrosion of carbon steel: none
Corrosion of magnesium: none
Corrosion of stainless steel: none
Corrosion of titanium: none
Residue: < 0.005 g/100 ml
Chloride content: < 50 ppm ($< 0.005\%$)
Fluoride content: < 50 ppm ($< 0.005\%$)
Sulfur content: < 50 ppm ($< 0.005\%$)
Mercury: none
Phenol: < 1 ppm ($< 0.0001\%$)
VOC's: 791 g/L Exempt from EPA limits
Ozone layer depleting substances: none
PCB's: none

The warranty shelf life of the product is 5 years
from date of batch approval.

Specifications

| | |
|-----------------------------|----------------|
| AMS-2644 | AMS-2647 |
| ASME B & PV code Sec V | ASTM E-165 |
| ASTM E-1417 | ISO-3452 |
| NAVSEA-T9074-AS-GIB-010/271 | |
| P & W PMC #9008 | RCC-M rev 2000 |

Product Availability

12 x 16oz (400ml) vol. aerosol (net wt 300g or 10.5oz)
1 gallon (3.7L) metal can
5 gallon (18.9L) metal pail



GHS Information



Danger

GHS: Hazard Statements:

H225: Highly flammable liquid and vapor.
***H229:** Pressurized container: may burst if heated.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness

GHS Precautionary Statements:

P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P261: Avoid breathing fumes/gas/mist/vapors/spray.
P280: Wear protective glove/clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection
***P410:** Protect from sunlight.
***P412:** Do not expose to temperatures exceeding $50^{\circ}\text{C}/122^{\circ}\text{F}$
*** Specific to aerosol cans**



GHS Response Statements:

IF INHALED: Remove person to fresh air and keep comfortable for breathing, get medical advice/attention if you feel unwell.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easily to do. Continue rinsing, get medical attention.
IF SWALLOWED: Rinse mouth, Do Not induce vomiting, get medical attention if feeling unwell.
IF ON CLOTHING: Take off contaminated clothing and wash before reuse.

Transport:

Bulk - UN1090, Acetone, class 3, packing group II, .
Aerosol: DOT- Limited Quantity.
Aerosol: IATA- UN 1950 ,Aerosol, flammable, class 2.1,

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Penetrant Professor Approved

Product Data Sheet
300LF*
Aqueous Alkaline Cleaner

1
10/2015



Met-L-Chek Company offers a complete line of cleaners used in the fluorescent (**Type 1**) and visible (**Type 2**) dye penetrant inspection process. **#300LF** is an aqueous alkaline cleaner used for pre-cleaning in preparation for penetrant inspection. **#300LF** is approved for use on aerospace components for general degreasing and cleaning and is similarly used in non aerospace applications. In all aqueous cleaner applications the cleaner and residues must be thoroughly rinsed from the surface with clean water and the surface dried prior to penetrant application. **#300LF** is also used for post inspection cleaning for the removal of inspection penetrant and developer residues.

Features and Benefits:

- #300LF** is effective in removing oily soils, light grease, finger prints, cutting fluids and coolants, salt residues, loose scale and rust.
- #300LF** is safe for use on steel, aluminum, magnesium, copper, titanium, nickel alloys; most plastics, composites and bonded paints.
- #300LF** is nonflammable, phenol free, heavy metals free, low foaming, and utilizes biodegradable surfactants.
- #300LF** is used in soak tanks, agitated dip tanks, spray washers, steam cleaners, and ultrasonic cleaners.
- #300LF** is low foaming, free rinsing, yielding clean streak free surfaces.

Approvals:

| | | | | | |
|--------------------|--------------------|-------------------------|--------------------|--------------------------------|------------------------|
| AMS-2647 | ARP 1755B | ASTM E-1417 | BF Goodrich | Boeing BAC 5763 type II | Boeing BAC 5749 |
| GE 70-21-22 | GE 70-21-24 | P&W SPMC 181 | | P&W SPOP 209 | RR Omat#1/24R |

Physical Properties:

| | | | | |
|--------------------------|----------------------|-----------------------|--------|-------------------|
| Appearance: Clear Liquid | Boiling Point: 100°C | Specific Gravity 1.06 | pH: 12 | Flash Point: None |
|--------------------------|----------------------|-----------------------|--------|-------------------|

Precautions:



GHS05 Corrosion
H314 Causes severe skin burns and eye damage.



P280: Wear protective glove/clothing/eye protection/face protection.

#300LF is alkaline and can cause irritation to skin and eyes. Protective goggles and rubber gloves should be worn when making up bath solutions, spraying, or handling parts in contact with the cleaner. In case of contact, flush skin or eyes thoroughly with clean water. If irritation persists seek medical attention. In disposing of spent bath the solution should be neutralized and disposed of in accordance to local regulations. Detailed information is available in the material safety data sheet. Understand all precautions and procedures before using the material.

Soak Tank Procedures:

Bath make up: 10%-25% **#300LF** mixed in tap water, use deionized water if tap water is very hard. Light soil cleaning low end of range, moderate soil removal higher end of range.

Bath temperature: Most efficient soil removal is achieved at elevated temperature between 120°F-140°F (49°C-60°C). Lower temperatures may be used but contact time will need to be increased.

Contact time: General contact time 10-15 minutes. Agitation, temperature, and concentration will influence cleaning time.

Cleaning sequence: Shake off or blow off loose soil. Immerse parts in bath. Best results achieved if bath is gently agitated. Remove parts and allow excess solution to drain back into tank. Flush part with fresh water spray, or immerse in an air agitated, dip rinse with clean water make up and overflow.

Spray Washer Procedures:

Bath make up: 5%-15% **#300LF** mixed in tap water. Light soil cleaning low end of range, moderate soil removal higher end of range.

Bath temperature: Most efficient soil removal is achieved at elevated temperature between 120°F-140°F (49°C-60°C). Lower temperatures may be used but contact time will need to be increased.

Contact time: General contact time 5-10 minutes. Temperature, and concentration will influence cleaning time.

Cleaning sequence: Shake off or blow off loose soil. Place part in washer and spray wash. Remove part from washer flush part with fresh water spray, or immerse in an air agitated, dip rinse with clean water make up and overflow.

* CeeBee Super Bee 300LF



Penetrant Professor Approved

Product Data Sheet

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10/2015

300LF* Aqueous Alkaline Cleaner

Foam Control:

If under application conditions excess foam develops anti foam can be added to knock down the foam at the rate of 5-10 oz. per 100 gallons. Adjustments to the #300LF use concentration should be made to control foam.

TANK ANALYSIS PROCEDURE

SCOPE: To determine concentration of 300LF baths at the shop level.

Reagents and Equipment:

- | | | |
|---------------------------------|--|--------------------------------------|
| 1.-pH meter | 5.-100 ml graduated stoppered cylinder | 9.-50 ml volumetric pipette, |
| 2.-0.1N acid, standard | 6.-sodium hydroxide solution, 50% | 10.-thermometer (up to 220 °F) |
| 3.-250 ml Erlenmeyer flask | 7.-50 ml burette | 11.-hand refractometer (0-30 scale), |
| 4.-deionized or distilled water | 8.-water bath (up to 200 °F) | A. O. Instrument Co. 10440 |



BY REFRACTOMETER READING:

1. Allow a sample of the 300LF bath to cool to room temperature ($25 \pm 2^\circ\text{C}$).
2. Thoroughly mix the sample and immediately apply a few drops to the inclined rectangular window of the refractometer using the plastic rod provided to make the transfer.
3. Immediately close the plastic cover over the window.
4. Hold the instrument up to a strong light and read the refraction value on the scale of 0 to 30 units (water will read -0-).

Calculations: Refractometer Reading X 4.7 = % by volume of 300LF

BY pH CONTROL

1. Maintain pH within a range of 10.5 to 11.5 to ensure good performance
 2. If the pH falls below 10.5, add 300LF pH Adjuster(20099).
- To increase the pH 0.1 of a unit, add, with agitation, approximately 1 oz. 300LF pH Adjuster for each 100 gal of tank solution.

BY TITRATION

1. Pipette 50 ml of tank solution into a 250 ml Erlenmeyer flask.
2. Add approximately 50 ml deionized water.
3. Titrate with 0.1N acid to pH of 9.0 and record ml acid as A.
4. Continue titration to a pH of 4.0 and record total ml acid as T.

Calculations: $(T - A) \times 1.16 = \% \text{ (vol.) } 300\text{LF}$

Interference will occur if pH Adjuster is used, giving high results, when the Refractive Index or Titration Method of analysis is used. The UV Method of Analysis is the preferred Method of Analysis and will give accurate results.

BY UV SPECTROPHOTOMETER METHOD

Equipment & Reagents:

- 1.- Deionized water
- 2.-UV Spectrophotometer,
- 3.-10 mm Quartz cuvettes,
- 4.-2 ml class A volumetric pipette 5.-100 ml class A volumetric flask.

1. Pipet and transfer a 2 ml aliquot from a foam free sample 300LF working bath into a 100 ml volumetric flask.
2. Dilute the flask to volume with deionized water, stopper and mix well by gentle inversion keeping foam to a minimum.
3. Measure the absorbance of this dilution using a 10 ml quartz cuvette at 272 nm. Use deionized water as a reference blank.
4. Use the following calculation: $\% \text{ bath volume } 300\text{LF} = 32.14 \times \text{ABSORBANCE UNIT}$

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