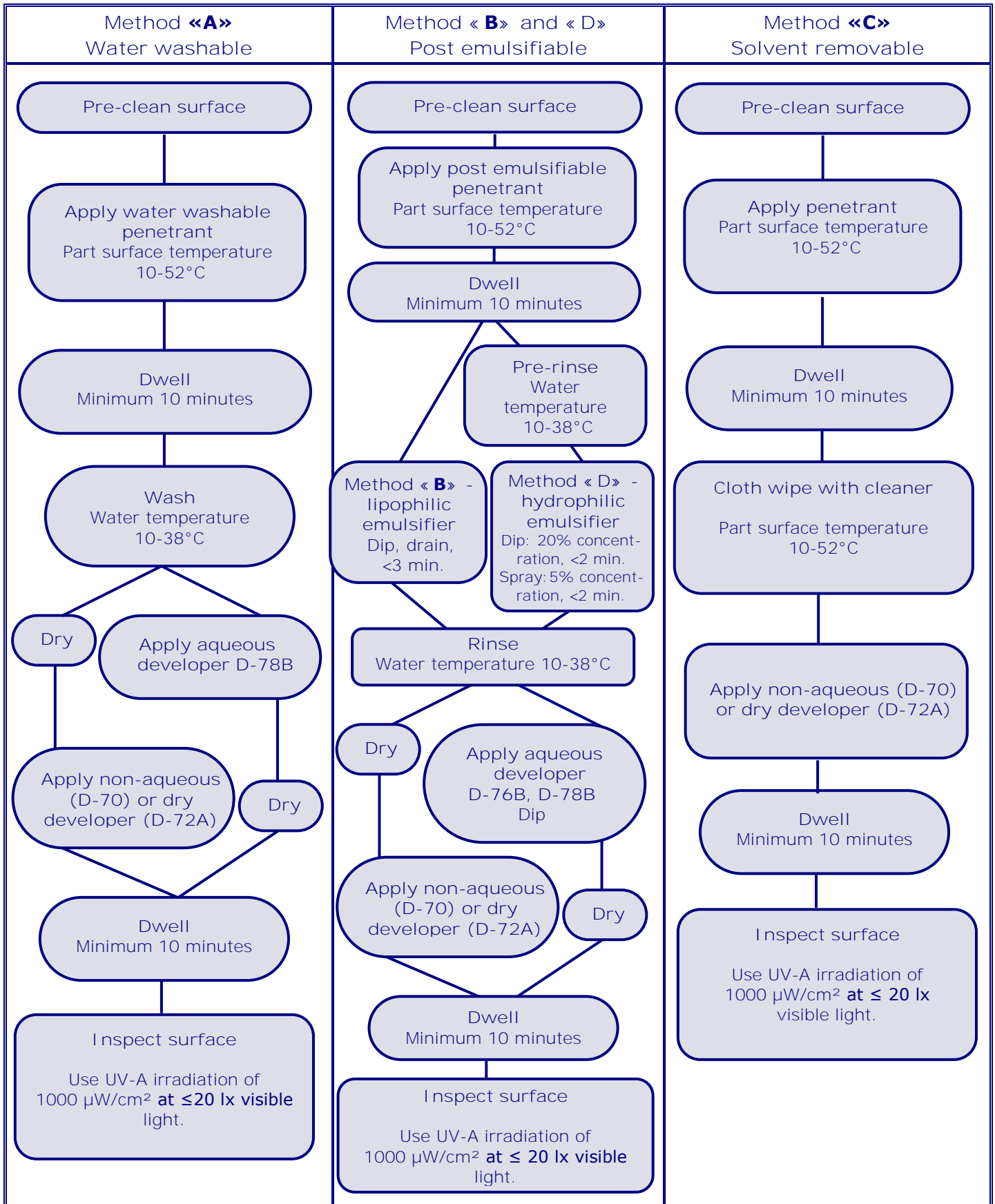




## FLUORESCENT PENETRANT TESTING





## FLUORESCENT PENETRANT TESTING

### MET-L-CHEK PENETRANT SYSTEMS

MET-L-CHEK manufactures a complete line of post emulsifiable and water washable fluorescent penetrants, designed to meet the requirements of nearly all applications.

Products are available in steps of sensitivity from level 1 to level 4.

The penetrants are listed on the Qualified Products List for AMS-2644. They meet the requirements of AMS-2644E, AMS-2647C, ASME Boiler and Pressure Vessel Code 07 Section V, ASTM E-165, ASTM E-1417, ASTM E-1209, ISO 3452, NAVSEA 250-1500-1 for penetrant inspection materials.

The MET-L-CHEK production program covers also a broad selection of emulsifiers, cleaners and removers.



These materials are designed to be used for removal of the penetrant film from the inspected surface while retarding the removal from any discontinuities, facilitating flaw detection.

MET-L-CHEK offers a wide range of developers used in the penetrant inspection process. The developer draws the penetrant from the discontinuity to form a more uniform background enhancing the detectability of the penetrant indication.

MET-L-CHEK materials are low in sulfur, chlorine and other halogens, making them safe for use on titanium and high nickel alloys in nuclear applications.

### Water washable fluorescent penetrants (Type I)

Removal methods:     A – water washable,  
                              C – solvent removable

#### *Product Name*

#### *Product Information*

MET-L-CHEK  
FP-90

A low-cost penetrant for general metal working inspection

Delivery form:

Can 1 L                     Art.No. 122.101.102  
Can 10 L                  Art.No. 122.101.103  
Cask 200 L                Art.No. 122.101.104

MET-L-CHEK  
FP-91

A moderate-priced fluorescent for general metal working inspection

Delivery form:

Can 1 L                     Art.No. 122.101.162  
Can 10 L                  Art.No. 122.101.163  
Cask 200 L                Art.No. 122.101.164

MET-L-CHEK  
FP-91B

A moderate-priced fluorescent for general metal working inspection

Delivery form:

Can 1 L                     Art.No. 122.101.502  
Can 10 L                  Art.No. 122.101.503  
Cask 200 L                Art.No. 122.101.504



## FLUORESCENT PENETRANT TESTING

### MET-L-CHEK PENETRANT SYSTEMS

#### Water washable fluorescent penetrants (Type I)

Removal methods:     A – water washable,  
                              C – solvent removable

<i>Product Name</i>	<i>Sensitivity Level acc. to AMS-2644</i>	<i>AMS-2644 OPL</i>	<i>Product Information</i>
MET-L-CHEK FBP-911	Level 1  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.101.602 Art.No. 122.101.603 Art.No. 122.101.604	Biodegradable penetrant used for the detection of fine cracks, porosity, and through leaks on metals, composites, synthetic materials, and some plastics. Low in sulfur and halogens, VOC free, and safe for use on all metal surfaces. It is bright yellow, smooth washing and non-gel forming, allowing a clean wash from rough surface.
MET-L-CHEK FP-921	Level 1  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.612 Art.No. 122.102.613 Art.No. 122.102.614	Penetrant for general metal working inspection, also approved for use in aircraft industry by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7.
MET-L-CHEK FBP-912	Level 2  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.101.902 Art.No. 122.101.903 Art.No. 122.101.904	Biodegradable penetrant used for the detection of fine cracks, porosity, and through leaks on metals, composites, synthetic materials, and some plastics. Low in sulfur and halogens, VOC free, and safe for use on all metal surfaces. It is bright yellow, smooth washing and non-gel forming, allowing a clean wash from rough surface.
MET-L-CHEK FP-922	Level 2  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.602 Art.No. 122.102.603 Art.No. 122.102.604	Penetrant with broad application spectrum, approved for high sensitivity aerospace applications by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7.
MET-L-CHEK FBP-913	Level 3  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.101.142 Art.No. 122.101.143 Art.No. 122.101.144	Biodegradable penetrant used for the detection of fine cracks, porosity, and through leaks on metals, composites, synthetic materials, and some plastics. Low in sulfur and halogens, VOC free, and safe for use on all metal surfaces. It is bright yellow, smooth washing and non-gel forming, allowing a clean wash from rough surface.
MET-L-CHEK FP-923	Level 3  <u>Delivery form:</u> Spray (400 ml) Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.621 Art.No. 122.102.622 Art.No. 122.102.623 Art.No. 122.102.624	Highly sensitive penetrant with broad application spectrum, especially used in aerospace applications at high demands and approved by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7.
MET-L-CHEK FBP-914	Level 4  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.101.152 Art.No. 122.101.153 Art.No. 122.101.154	Biodegradable penetrant used for the detection of fine cracks, porosity, and through leaks on metals, composites, synthetic materials, and some plastics. Low in sulfur and halogens, VOC free, and safe for use on all metal surfaces. It is bright yellow, smooth washing and non-gel forming, allowing a clean wash from rough surface.



## FLUORESCENT PENETRANT TESTING

### MET-L-CHEK PENETRANT SYSTEMS

#### Post emulsifiable fluorescent penetrants

Removal Methods: B – post emulsifiable, lipophilic  
 C – solvent removable  
 D – post emulsifiable, hydrophilic

Product Name	Sensitivity Level acc. to AMS-2644	AMS-2644 OPL	Product Information
MET-L-CHEK FP-93A(M)	Level 2  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.302 Art.No. 122.102.303 Art.No. 122.102.304	A medium sensitivity penetrant suitable for use in general metal working inspection. Approved for use in aircraft industry by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7. Used with either lipophilic E-57 (Method B) or hydrophilic E-58D (Method D) emulsifiers.
MET-L-CHEK FP-95A(M)	Level 3  <u>Delivery form:</u> Spray can 400 ml Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.401 Art.No. 122.102.402 Art.No. 122.102.403 Art.No. 122.102.404	A high sensitivity penetrant that is widely used on production lines of aircraft and other critical components. Approved by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7. Used with either lipophilic E-57 (Method B) or hydrophilic E-58D (Method D) emulsifiers.
MET-L-CHEK FP-97A(M)	Level 4  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.102.502 Art.No. 122.102.503 Art.No. 122.102.504	An ultra-high sensitivity penetrant that is approved for use on fracture critical rotating turbine components by Boeing BSS 7039 & BAC 20-20-0, Pratt & Whitney FPM PMC #4353-AG, General Electric Aircraft Engines 70-32-02 & Gas Turbines LM6000 PC 11, Rolls-Royce RPS-702-7. Used with either lipophilic E-57 (Method B) or hydrophilic E-58D (Method D) emulsifiers.

#### Cleaners & Removers:

Product Name	Solvent Class	AMS-2644 OPL	Product Information
MET-L-CHEK NPU	Class 2 – non-halogenated  <u>Delivery form:</u> Spray can 400 ml Can 1 L Can 10 L Cask 200 L	conf.  Art.No. 121.100.101 Art.No. 121.100.102 Art.No. 121.100.103 Art.No. 121.100.104	Alcohol based cleaner and remover for use with all penetrants.
MET-L-CHEK E-59 A	Class 2 – non-halogenated  <u>Delivery form:</u> Spray can 400 ml Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.113.101 Art.No. 122.113.102 Art.No. 122.113.103 Art.No. 122.113.104	Moderate drying cleaner and remover for use with all penetrants, ideal for penetrant wipe removal and pre-inspection surface cleaning. It is composed of petroleum solvents and has a gentle solvent action, which is ideal for the removal of excess surface penetrant.
MET-L-CHEK R-503	Class 2 – non-halogenated  <u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	yes  Art.No. 122.113.112 Art.No. 122.113.112 Art.No. 122.113.112	A fast drying cleaner and remover for use with all penetrants. Ideal for penetrant wipe removal and pre-inspection surface cleaning as well as for storing test panels in.
MET-L-CHEK R-504	Class 2 – non-halogenated  <u>Delivery form:</u> Spray can 400 ml	yes  Art.No. 112.113.121	A very fast drying cleaner and remover, ideal for penetrant wipe removal, especially for the verification of indications. Phenol free.



## FLUORESCENT PENETRANT TESTING

### MET-L-CHEK PENETRANT SYSTEMS

#### Emulsifiers:

Product Name	Method	AMS-2644 QPL	Product Information
MET-L-CHEK E-57	«B»	yes	A lipophilic emulsifier used with all MET-L-CHEK post emulsifiable penetrants. After an appropriate penetrating dwell time the parts are immersed into the emulsifier, then removed and allowed to drain from 30 seconds to 3 minutes, depending upon the part surface roughness. After this step parts are water washed. E-57 is supplied ready to use.
	<u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	Art.No. 122.112.302 Art.No. 122.112.303 Art.No. 122.112.304	
MET-L-CHEK E-58 D	«D»	yes	A hydrophilic emulsifier for all MET-L-CHEK post emulsifiable penetrants, which is supplied as a concentrate. In use it is diluted with water to 17-20 % concentration for immersion applications and below 5% for spray applications. In immersion applications the penetrant covered part is given a quick water wash and then immersed into the gently agitated emulsifier from 30 seconds to 2 minutes depending upon the part surface roughness. For spray applications the pre-rinse step may be omitted. Then the parts are removed and water washed.
	<u>Delivery form:</u> Can 1 L Can 10 L Cask 200 L	Art.No. 122.112.202 Art.No. 122.112.203 Art.No. 122.112.204	

#### Developers:

Product Name	Form	AMS-2644 QPL	Product Information
MET-L-CHEK D-70	d & e – non-aqueous	yes	A suspension of an absorbent powder in a volatile solvent. The solvent action of this type of developer helps bring the penetrant to the surface enhancing the detectability of the finest flaws. D-70 dries quickly and produces a smooth, uniformly white coating. Use with visible and fluorescent penetrants.
	<u>Delivery form:</u> Spray can 400 ml Can 1 L Can 10 L Cask 200 L	Art.No. 121.100.501 Art.No. 121.100.502 Art.No. 121.100.503 Art.No. 121.100.504	
MET-L-CHEK D-78B	c – water suspendible	yes	D-78B is a dry powder, which is dispersed in water to form a suspension. It must be agitated to maintain uniformity. This form of developer is generally applied by immersion dip, flow on, or gentle airless spray, prior to the drying process. A uniform film will form during the drying. Not to be used with water washable penetrants.
	<u>Delivery form:</u> Container 20 kg	Art.No. 122.120.406	
MET-L-CHEK D-72A	a – dry	yes	A light, fluffy, dry powder developer, which is used for fluorescent penetrant inspection. This form of developer is generally applied in special storm or dust chamber equipment, but may also be dusted onto parts with a feather duster or electrostatic spray. If sprayed avoid buildup of a heavy developer film. A very fine dusting is the recommended coverage.
	<u>Delivery form:</u> Container 1 kg	Art.No. 122.120.306	
MET-L-CHEK D-76B	b – water soluble	yes	A water soluble developer for use with post emulsifiable fluorescent penetrants. It is supplied as a dry powder which is dissolved in water. Once dissolved, no agitation of the bath is required. This form of developer is generally applied by immersion dip, flow on, or gentle airless spray, prior to the drying process. A uniform film will form during the drying. Most specifications do not allow the use of this form of developer with Method A (water washable) penetrants.
	<u>Delivery form:</u> Container 10 kg Container 20 kg	Art.No. 121.100.606 Art.No. 121.100.607	





## *Met-L-Chek*<sup>®</sup>

Fluorescent (Type I) and contrast colour (Type II) penetrant inspection media

REMOVAL METHODS: A – Water washable  
 B – Post emulsifiable, lipophilic  
 C – Solvent removable  
 D – Post emulsifiable, hydrophilic

SENSITIVITY LEVEL: 1 – low; 2 – medium; 3 – high; 4 – ultra high

DEVELOPER FORMS: a – Dry developer; usable with all fluorescent penetrants  
 b – Water soluble developer; not to be used with water washable penetrants  
 c – Water suspendible developer; not to be used with water washable penetrants  
 d – Nonaqueous developer; usable with Type I penetrants, Methods A, B, C & D.  
 e – Nonaqueous developer; usable with Type II penetrants, Methods A, B, C & D.  
 f – Special application developer.

SOLVENT CLASS: 1 – Halogenated solvent remover, usable with all penetrants, Method C.  
 2 – Nonhalogenated solvent remover, usable with all penetrants, Method C.  
 3 – Special application material to be used with special penetrants, Method C.

Name	Type	Method/ class/ form	Sensitivity level	AMS- 2644 QPL	General description
FP-90	I	A & C	-	Conf.	Very low sensitivity, general metal working
FP-91	I	A & C	-	Conf.	Low sensitivity, general metal working
FB-91B	I	A & C	-	Conf.	Low sensitivity, general metal working
FBP-911	I	A & C	1	Certified	Biodegradable, low sensitivity, all applications
FP-921	I	A & C	1	Certified	Low sensitivity, approved for aerospace applications
FBP-912	I	A & C	2	Certified	Biodegradable, medium sensitivity, all applications
FP-922	I	A & C	2	Certified	Medium sensitivity, approved for aerospace applications
FBP-913	I	A & C	3	Certified	Biodegradable, high sensitivity, all applications
FB-923	I	A & C	3	Certified	High sensitivity, approved for aerospace applications
FBP-914	I	A & C	4	Certified	Biodegradable, ultra-high sensitivity, all applications
FP-93A(M)	I	B, C & D	2	Certified	Post emulsifiable, medium sensitivity, all applications
FP-95A(M)	I	B, C & D	3	Certified	Post emulsifiable, high sensitivity, all applications
FP-97A(M)	I	B, C & D	4	Certified	Post emulsifiable, ultra-high sensitivity, all applications
VP-30	II	A & C	NA	Certified	Welding, nuclear and general metal working
VBP-300	II	A & C	NA	Certified	Biodegradable, general metal working
ROT 1001	III	A & C	NA	Conf.	AZO-free, welding, nuclear and general metal working
VP-302	II	C	NA	Certified	Special high temperature penetrant (52°C – 177°C)
E-57	I	B	NA	Certified	Lipophilic emulsifier for FP-93/95/97A(M)
E-58D	I	D	NA	Certified	Hydrophilic emulsifier for FP-93/95/97A(M)
NPU	I & II	C, class 2	NA	Conf.	Alcohol based cleaner / remover for all penetrants
E-59A	I & II	C, class 2	NA	Certified	Moderate drying cleaner / remover for all penetrants
R-502	II	C, class 3	NA	Certified	Special high temperature inspection remover for VP-302
R-503	I & II	C, class 2	NA	Certified	Fast drying cleaner / remover for all penetrants
R-504	I & II	C, class 2	NA	Certified	Very fast drying remover / cleaner for all penetrants
D-70	I & II	d & e	NA	Certified	Non-aqueous, solvent based developer, all penetrants
D-72A	I	a	NA	Certified	Dry powder developer, all fluorescent penetrants
D-76B	I	b	NA	Certified	Water soluble developer, post emulsifiable penetrants
D-78B	I & II	c	NA	Certified	Water suspendible developer, post emulsifiable penetrants
D-702	II	f	NA	Certified	Special high temperature inspection developer for VP-302