

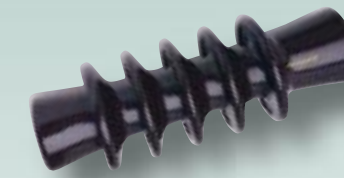
Detects cracks, laps, pores in
Metals

Phone: (+49-202) 7192-0 · Fax: (+49-202) 714932
D-42115 Wuppertal Germany
info@karldeutsch.de · http://www.karldeutsch.de

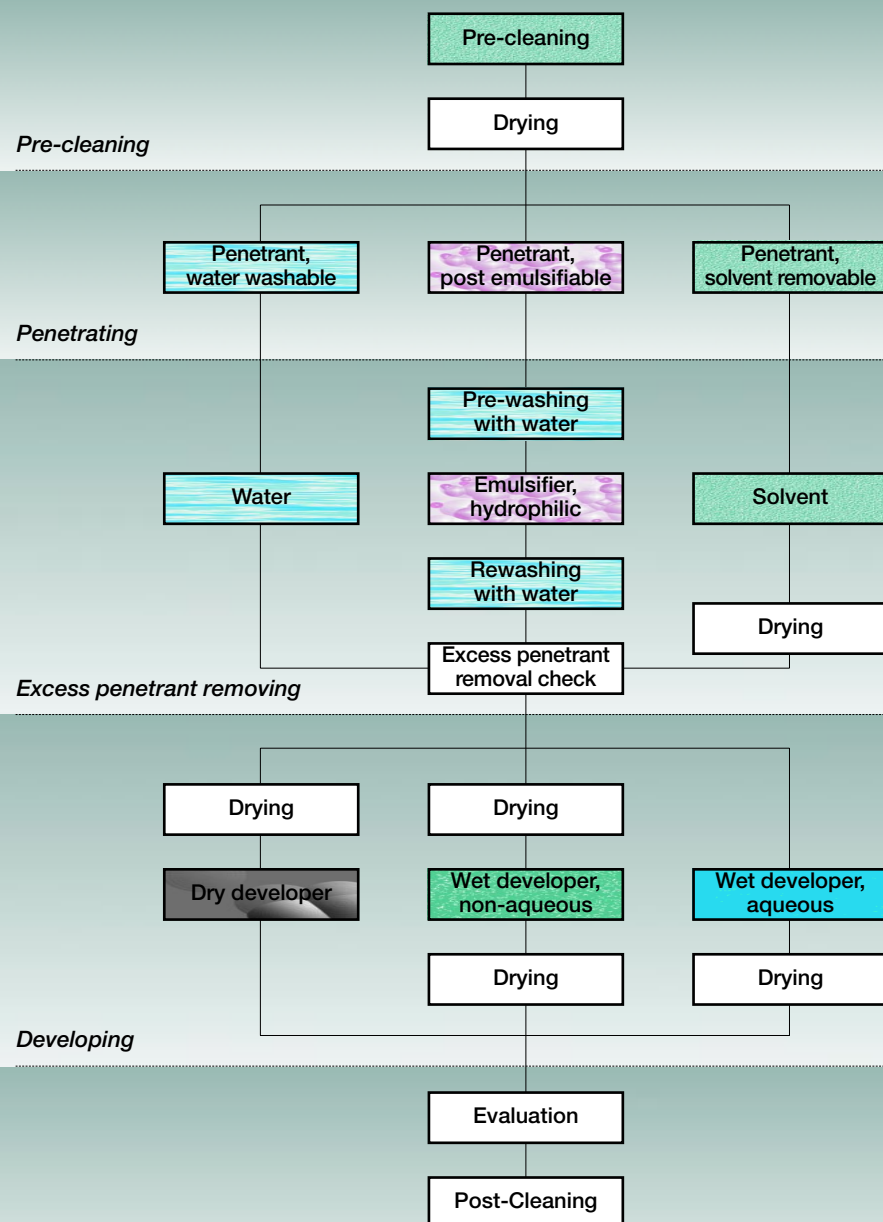
Plastics



Ceramics



Procedure of penetrant testing according to EN 571-1: (most important techniques)



Testing media for penetrant testing according to EN 571-1:



Penetrants, distinguished by types:

- Type I** Fluorescent penetrants
KD-CHECK FWP-1, FNP-1
- Type II** Colour contrast penetrants
KD-CHECK RDP-1, BDP-1
- Type III** Fluorescent colour contrast penetrants
KD-CHECK RDP-2

Excess penetrant removal, distinguished by methods:

- Method A** Water
- Method B** (obsolete) Lipophilic emulsifier
- Method C** Solvent liquid
KD-CHECK PR-1, PR-2
- Method D** Hydrophilic emulsifier
KD-CHECK HE-1
- Method E** Water and solvent

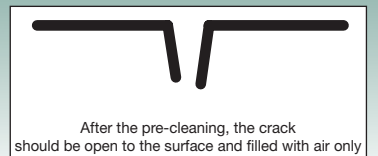
Developers, distinguished by forms:

- form a** Dry developer, KD-CHECK DD-1
- form b** Wet developer, aqueous solution
- form c** Wet developer, aqueous suspension
- form d** Wet developer, non-aqueous, KD-CHECK SD-1
- form e** Wet developer for special applications

Important steps of procedure in detail:

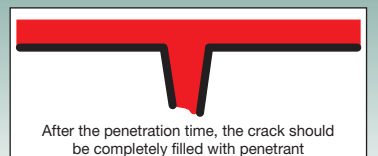
Pre-cleaning: Usual methods:

- Cleaning with solvents
- Cleaning with tensides
- Steam cleaning
- Etching (or alkaline)
- Electric cleaning
- Ultrasonic cleaning
- Combination of these methods



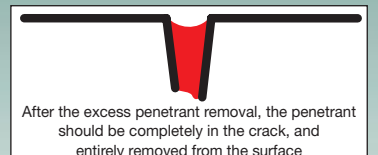
Penetrating: Application of the penetrant by

- Spraying
- Diving
- Brush-painting
- Perfusing



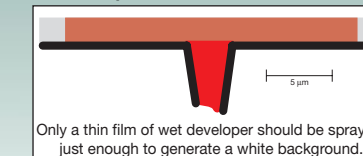
Excess penetrant removing by

- Water
- Emulsifier or
- Solvent, but
- **Never** apply solvents for excess penetrant removal by spraying!

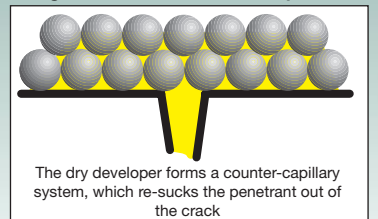


Developing: Mainly with

- Wet developer (non-aqueous) for all penetrants



- Dry developers should only be used together with fluorescent penetrants



Never use dry developer together with colour contrast penetrants!

Standards and guide lines

Specially in Germany, but also in English language:

- DGZfP-EM 1: Recommendations about the visual function of non-destructive testing personnel
- DGZfP-EM 2: Inspection conditions for magnetic particle and penetrant testing

Europe: EN 571-1:

- EN 1330-6: Penetrant testing, Terminology
- EN ISO 3452-2: Penetrant testing, Testing of Penetrants
- EN ISO 3452-3: Penetrant testing, Reference blocks
- EN ISO 3452-4: Penetrant testing, Instruments

World-wide:

- AMS 2644 (formerly MIL-I-25135): Inspection Material, Penetrant (aircraft industry)
- ASME-Code Section V, Article 6: Nondestructive Examination, Liquid Penetrant Examination (tank construction)