

CE–Marking for Piping Systems

DI Udo Pappler

Manager of the Notified Body *ofi-CERT*
(NB No. 1085)

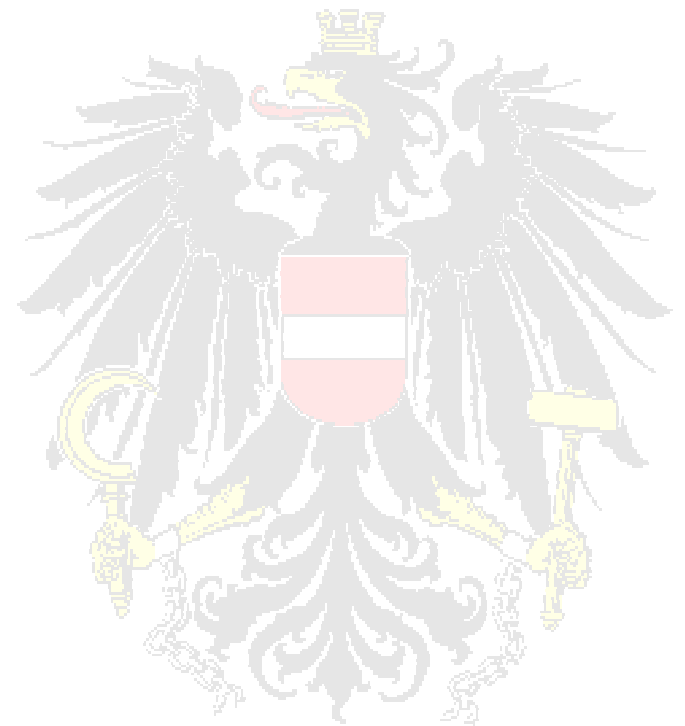


Operational Sequence

- Step 1: Participants' expectations
- Step 2: Harmonizing the standard of knowledge
- Step 3: Any questions / topics that have not been dealt with



- Why product certification?
- The statutory sector
 - CE-Marking
 - EAS-Mark
- The “voluntary sector”
- Summary & outlook



Purpose of Certification

- Proof of conformity of a product / production with technical (standard) and statutory (directive) requirements
- Bestowal of the mark shows that the requirements have been met, amongst other things quality respectively (aspect of marketing)
- Certification is the condition for „Sales“ or „Installation“ in an economic area (EEA)

- Why product certification?
- The statutory sector
 - CE-Marking
 - EAS-Mark
- The “voluntary sector”
- Summary & outlook



Statutory Sector

EC's decision of general principles in the 90's ...

- Heterogeneity of national standards in contradiction to free trade
- Harmonization of rules and regulations, reduction to „essential requirements“ (pooled into product groups in the EC's directives)
- Conformity results in a CE-Marking and the
 - prerequisite for „Sales“ and
 - for meeting the statutory requirements

Statutory Sector

Some EC Directives

- 88/378/EEC Safety of Toys
- 89/106/EEC Construction Products Directive (CPD)
- 90/336/EEC Electromagnetic Compatibility
- 93/42/EEC Medical Devices: General
- 94/62/EEC Packaging and packaging waste
- 98/83/EEC Drinking Water Directive (DWD)
- 97/23/EEC Pressure Vessel Directive (PVD)

Statutory Sector

EC issues a directive e.g. 89/106/EEC (12/88)



Published in the Official Journal L40 (02/89)



Adopted into national law (state and/or provinces) within 30 months



BGBl. 55/1997, LGBl. 73/2001 (Salzburg Construction Products Act) published

Statutory Sector

EC issues e.g. 89/106/EEC (12/88)



EC instructs CEN/TC (e.g. Mandate M 131)



Preparation of harmonized rules and regulations (hEN) by CEN/TC or EOTA as well as voting



Adoption of hEN as e.g. an ÖNORM EN into the national set of standards or publication of a ETAG by OIB

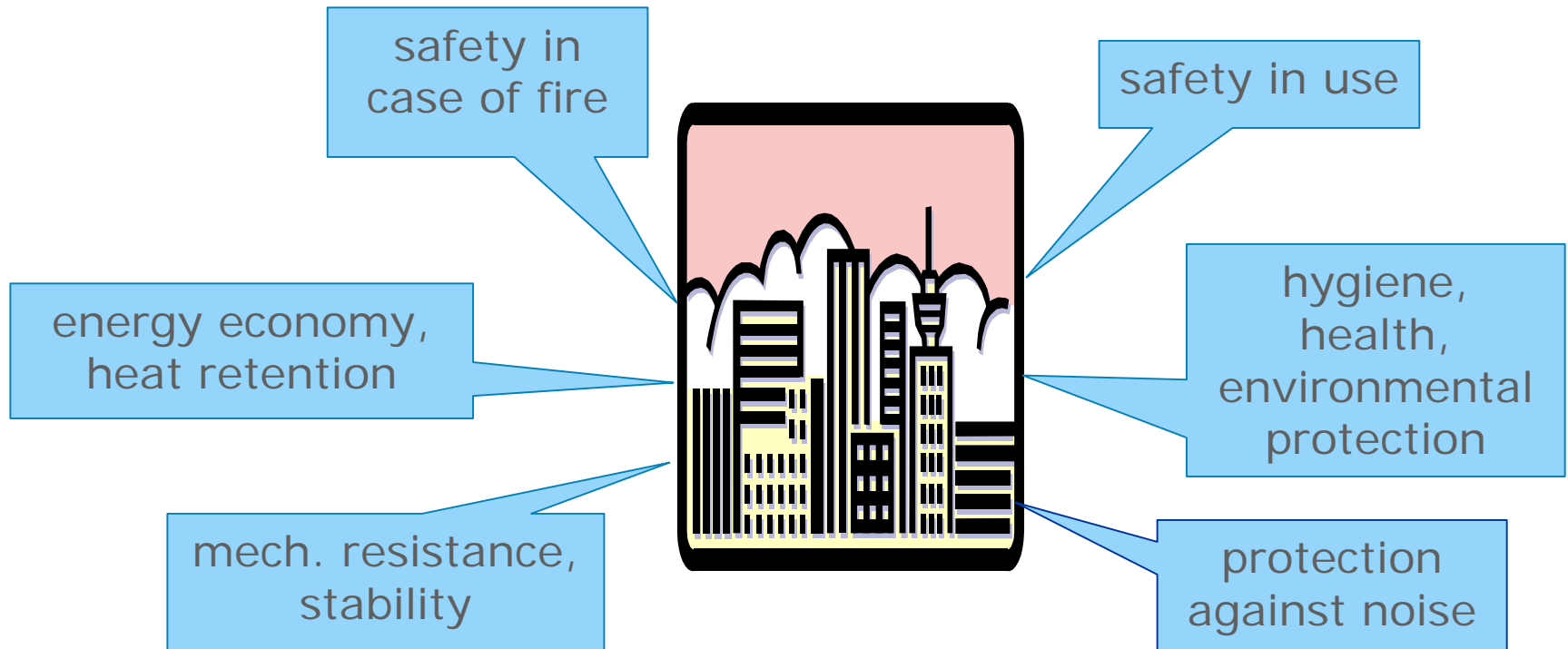
Construction Products Directive

The Construction Products Directive (CPD) ...

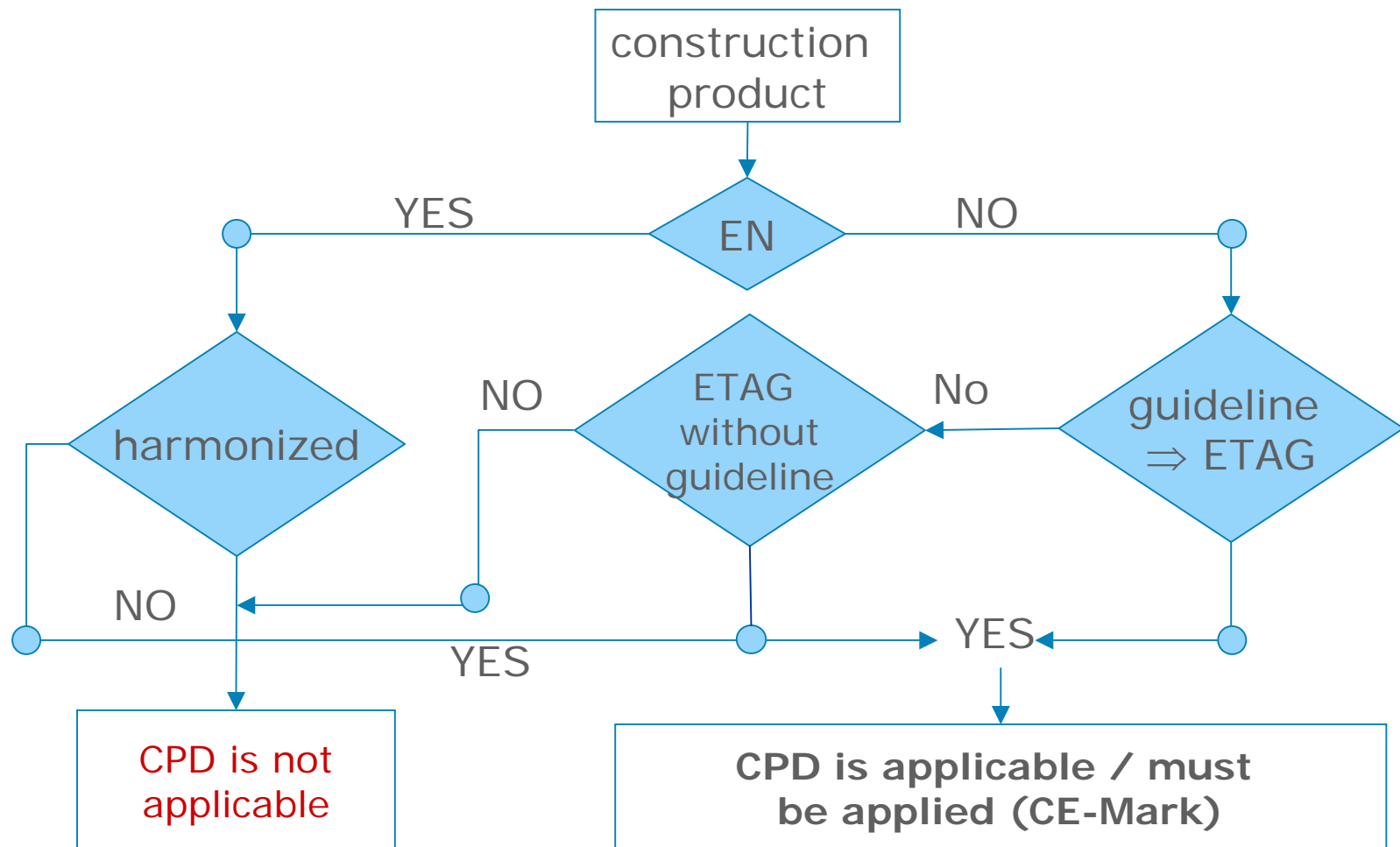
- Lists „essential requirements“ for buildings, but not building products
- Applies only to products, which are subject to national laws and regulations
- Refers to „Technical Requirements“, which these products have to meet:
 - Harmonized European Standards (hEN) of CEN
 - European Technical Approval (ETAG) of EOTA

Construction Products Directive

„Essential requirements“ for buildings ...



Construction Products Directive



Construction Products Directive

The Construction Products Directive (CPD) ...

- Allows the **upholding of levels of protection** (threshold value) in national laws of the member states
- Provides for **CE-marking of products**
- Is **basis for mandates** (assignment from EC to CEN or EOTA) such as e.g. M/131
- **Defines conformity attestation systems (AoC)** and therefore also the tasks of testing laboratories, inspection- and certification bodies

Construction Products Directive

AoC	Tasks for the Manufacturer	Task for the Notified Body	Status
1	<ul style="list-style-type: none"> Factory production control (FPC) Sampling inspection in line with a prescribed testing plan 	Certification of the product on the basis of: <ul style="list-style-type: none"> Initial type-testing (ITT) of the product Initial inspection of the factory, Factory production control (FPC) Surveillance, Factory production control (FPC) Sampling inspection according to test plan (AoC 1+) 	Certification of the product's conformity by the Notified Body
2	<ul style="list-style-type: none"> Initial type-testing of the product (ITT) Factory production control (FPC) 	Certification FPC on the basis of: <ul style="list-style-type: none"> Initial inspection factory (ITT), Factory production control (FPC) Continuous surveillance, Factory production control (FPC) (AoC 2+) 	
3	<ul style="list-style-type: none"> Factory production control (FPC) 	<ul style="list-style-type: none"> Initial type-testing (ITT) of the product 	Declaration of the product's conformity by the manufacturer
4	<ul style="list-style-type: none"> Initial type-testing of the product (ITT) Factory production control (FPC) 	---	

Plastics Pipes and the CE-Marking

- [prEN 15012](#) – „Plastics piping systems – Soil and waste discharge systems within the building structure“
- [prEN 15013](#) – „Plastics piping systems – Non-pressure drainage and sewerage systems buried in the ground“
- [prEN 15014](#) – „Plastics piping systems – Buried and above ground systems for water and other fluids under pressure“
- [prEN 15015](#) – „Plastics piping systems – Systems for hot and cold water not intended for human consumption“

Plastics Pipes and the CE-Marking

General information to the prENs...

- Harmonized Standards are as yet drafts (prENs)
- 9 months after the presentation of an EN the Official Journal of the EC announces:
 - End of the transition period
 - Start of the obligatory marking
- Standards apply to pipes, chambers and auxiliaries which do not come into contact with drinking water (M/131).

Plastics Pipes and the CE-Marking

prEN 15012 -

Plastics piping systems -

Soil and waste discharge systems
within the building structure

Plastics Pipes and the CE-Marking

- Cluster standard for materials PVC-U, PP, ABS, PE, PVC-C, SAN/PVC
- **Minimum requirements** (classification of reaction to fire, dimensions, tightness, durability by means of thermal shock, rigidity for applications buried in ground)
- **Conformity attestation system basically 4**
- **If reaction to fire is relevant, then system 1 or 3 just for this property;** other properties are subject to system 4

Plastics Pipes and the CE-Marking

- Conformity is assessed by classification into 3 size groups and 3 groups of type for fittings
- Type testing on 1 product per group, FPC defined by the manufacturer and documented (met, if the system is operated according to EN ISO 9001)
- Property-requirements do not apply, if the country does not have statutory stipulations on the property for the product's intended use (marking NPD).

Plastics Pipes and the CE-Marking

Table 1 – Size groups

Size groups	Range of nominal outer diameters, d_n
1	$32 < d_n \leq 63$
2	$63 < d_n \leq 180$
3	$d_n > 180$

Table 2 – Type groups

Type group	Thermoplastic piping components
1	Bends
2	Branches
3	Other fittings

Plastics Pipes and the CE-Marking

Table 3: Type testing of pipes and fittings

Essential characteristics	Requirement clause in this document	Testing relevant to ^a			Acceptance
		I	M	E	
Reaction to fire	4.1	+	+	-	see classification in EN 13501-1
Dimensional tolerances	4.2	+	+	+	pass/fail
Tightness	4.3	+	-	+ ^b	pass/fail
Durability	4.4	+	+	+	pass/fail
Maximum pressure for admissible deformation	4.5				pass/fail
- pipes		+	+	+	
- fittings		+	+	+	
Release of dangerous substances	4.6	+ ^d	+ ^d	-	pass/fail
^a I is the initial type test in case of a new system M is a change of material E is extension of the product range + denotes testing relevant for the characteristic-occurrence-combination ^b only in case of an extension of the dimensions ^c only for components with a nominal outer diameter of ≥ 75 mm, which are intended for buried use within the building structure ^d only to be performed if subjects to regulatory requirements					

Plastics Pipes and the CE-Marking

Table ZA.1: Relevant clauses for pipes and fittings made of thermoplastics for the discharge of waste water for application area B: Inside the building structure

Essential characteristics	Requirement clauses in this standard	Levels and/or classes	Notes
Reaction to fire	4.1	A to F	See classification in EN 13501-1
Dimensional tolerances	4.2	none	pass/fail
Density: gas and liquids	4.3	none	pass/fail
Durability	4.4	none	pass/fail
Release of dangerous substances	4.6	none	

Plastics Pipes and the CE-Marking

Table ZA.2: Relevant clauses for pipes and fittings made of thermoplastics for the discharge of waste water inside the building structure as well as for buried use inside the building structure with a diameter of > 75 mm

Essential characteristics	Requirement clause in this document	Levels and/or classes	Acceptance
Reaction to fire	4.1	A to F ^a	see classification in EN 13501-1
Dimensional tolerances	4.2	none	pass/fail
Tightness: gas and liquids	4.3	none	pass/fail
Durability	4.4	none	pass/fail
Maximum pressure for admissible deformation	4.5	none	ring stiffness [kN/m ²]
Release of dangerous substances	4.6	none	
^a The classification achieved by tests according to 5.1 applies to diameter group 32 mm –315 mm			

Plastics Pipes and the CE-Marking

Table ZA.3: System of attestation of conformity

Products	Intended use	Level or class	Attestation of conformity
Pipes, fittings	Systems to discharge waste water and subject to reaction to fire regulations	A1*, A2*, B* and C* A1**, A2**, B**, C**, D and E (A1 - E)*** and F	1 ^{a b} 3 ^{a b} 4 ^{a b}
	Systems to discharge waste water, not subject to reaction to fire regulations	none	4 ^a
<p>* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).</p> <p>** Products/materials not covered by footnote (*).</p> <p>*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commission Decision 98/603/EG, as amended).</p>			
<p>^a System 1: See Directive 89/108/EEC (CPD), Annex III.2.(i), without audit testing of samples. System 3: See Directive 89/108/EEC (CPD), Annex III.2.(ii), second possibility. System 4: See Directive 89/108/EEC (CPD), Annex III.2.(ii), third possibility.</p> <p>^b System 1 or System 3 shall be applied for the characteristic „reaction to fire“, for the other characteristics System 4 shall be applied.</p>			

Plastics Pipes and the CE-Marking

Table ZA.4: Assignment of evaluation of conformity tasks for pipes, fittings and joints under System 1

Tasks		Contents of task	Clauses to apply for the evaluation of conformity
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of tables ZA.1 and ZA.2	6.2
	Initial type testing	All relevant characteristics of tables ZA.1 and ZA.2 except "reaction to fire"	6.1
Tasks for the notified body	Factory production control (FPC) ^a	Reaction to fire	6.2
	Initial type testing	Reaction to fire	6.1

^a The factory production control tests to be performed by the manufacturer will be chosen with the notified body on the basis of existing reaction to fire test methods.

Plastics Pipes and the CE-Marking

Table ZA.5: Assignment of evaluation of conformity tasks for pipes, fittings and joints under System 3

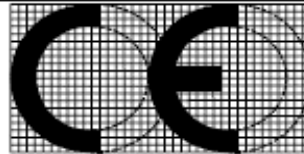
Tasks		Contents of task	Clauses to apply for the evaluation of conformity
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of tables ZA.1 and ZA.2	6.2
	Initial type testing	All relevant characteristics of tables ZA.1 and ZA.2 except "reaction to fire"	6.1
Tasks for the notified body	Initial type testing	Reaction to fire	6.1

Plastics Pipes and the CE-Marking

Table ZA.6: Assignment of evaluation of conformity tasks for pipes, fittings and joints under System 4

Tasks		Contents of task	Clauses to apply for the evaluation of conformity
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of tables ZA.1 and ZA.2, except "reaction to fire"	6.2
	Initial type testing	All relevant characteristics of tables ZA.1 and ZA.2 except "reaction to fire"	6.1

Plastics Pipes and the CE-Marking



Firma, PSF123, FR-12345

05-01

01234-BPR-00567

EN 15012

Name und Werkstoff	Rohr aus PVC-U
Vorgesehener	
Verwendungszweck	Ableitung von Abwasser
DN	BD
Brandverhalten	110
Grenzabmaße	B
Dichtheit (Wasser, Luft)	nach EN 1329-1
Dauerhaftigkeit bei	keine Undichtheit
Gebrauch	— Werkstoff nach
Ringsteifigkeit	EN 1401-1
Freisetzen gefährlicher	— Dichtringe nach
Substanzen	EN 681-1
	SN 4
	KLF

Plastics Pipes and the CE-Marking

prEN 15013 -

- Plastics piping systems – Non-pressure drainage and sewerage systems buried in the ground

Plastics Pipes and the CE-Marking

- Cluster standard for materials PVC-U, PP, PE, GFK
- **Minimum requirements** (rigidity, dimensions, tightness, durability by means of conformity with product-EN or alternative)
- **Conformity attestation system 4**
- Assessment of conformity is performed by **classification into 3 dimension groups and 3 groups of types** for fittings

Plastics Pipes and the CE-Marking

- Type testing on 1 product per group, FPC defined by the manufacturer and documented (met, if the system is operated according to EN ISO 9001)
- Property-requirements do not apply, if the country does not have statutory stipulations on the property for the product's intended use (marking NPD).

Plastics Pipes and the CE-Marking

Table 2 — Size groups

Size group	Range of nominal diameters, d_n	
	for thermoplastics material	for thermosetting plastics
1	$d_n \leq 200$	
2	$200 < d_n \leq 500$	$d_n < 600$
3	$d_n > 500$	$d_n \geq 600$

Table 3 – Type groups

Type group	Thermoplastics piping components
1	Bends
2	Elbows and tees
3	Other fittings

Plastics Pipes and the CE-Marking

Table 4 — Type testing of pipes and fittings

Essential characteristics	Requirement clause in this document	Testing relevant to ^a			Acceptance
		I	M	E	
Maximum pressure for admissible deformation - pipes - fittings	4.1	+	+	+	
Dimensional tolerances	4.2	+	-	+	pass/fail
Tightness	4.3	+	-	+ ^b	pass/fail
Durability - ring flexibility - durability of material	4.4	+	+	+	pass/fail
Release of dangerous substances	4.5	+ ^c	+ ^c	-	pass/fail
^a I is initial type test in case of new system; M is change of material; E is extension of the product range; + denotes testing relevant for the characteristic-occurrence-combination. ^b Only in case of an extension of the dimensions ^c Only to be performed if subject to regulatory requirements.					

Plastics Pipes and the CE-Marking

Tabelle ZA.1 — Maßgebende Abschnitte für thermoplastische Rohre und Formstücke

Wesentliche Eigenschaften	Abschnitte mit Anforderungen in dieser Norm	Stufen und/oder Klassen	Anmerkungen
Maximale Belastung für die zulässige Verformung	4.1	keine	Ringsteifigkeit in kN/m^2
Grenzabmaße	4.2	keine	Bestehen/Versagen
Dichtheit: Gas und Flüssigkeiten	4.3	keine	Dicht
Dauerhaftigkeit	4.4.1.2	keine	Bestehen/Versagen
Freisetzen gefährlicher Substanzen	4.5	keine	

Plastics Pipes and the CE-Marking

Tabelle ZA.2 — Maßgebende Abschnitte für duroplastische Rohre und Formstücke

Wesentliche Eigenschaften	Abschnitte mit Anforderungen in dieser Norm	Stufen und/oder Klassen	Anmerkungen
Maximale Belastung für die zulässige Verformung	4.1	keine	Ringsteifigkeit in kN/m^2
Grenzabmaße	4.2	keine	Bestehen/Versagen
Dichtheit: Gas und Flüssigkeiten	4.3	keine	Bestehen/Versagen
Dauerhaftigkeit	4.4.1.3	keine	Bestehen/Versagen
Freisetzen gefährlicher Substanzen	4.5	keine	

Plastics Pipes and the CE-Marking

Tabelle ZA.3 - System der Konformitätsbescheinigung

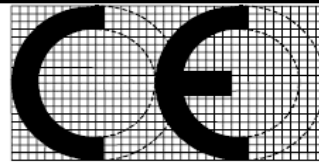
Produkte	Vorgesehener Verwendungszweck	Stufe oder Klasse	Konformitätsbescheinigung
Rohre Formstücke	Drucklose erdverlegte Abwasserkanäle und -leitungen	keine	4 ^a
^a System 4: Siehe Richtlinie 89/106/EWG (BPR), Anhang III.2.(ii), Möglichkeit 3.			

Plastics Pipes and the CE-Marking

Tabelle ZA.4 — Zuordnung der Aufgaben der Bewertung der Konformität von Rohren, Formstücken und Verbindungen unter System 4

Aufgaben		Inhalt der Aufgabe	Anzuwendende Abschnitte zur Konformitätsbewertung
Aufgaben des Herstellers	Werkseigene Produktionskontrolle (WPK)	Parameter, bezogen auf alle maßgebenden Eigenschaften in Tabellen ZA.1 oder ZA.2	6.2
	Erst-Typprüfung	Alle maßgebenden Eigenschaften in Tabellen ZA.1 oder ZA.2	6.1

Plastics Pipes and the CE-Marking



Firma, PSF123, FR-12345

07-01

EN 15013

Name und Werkstoff	Rohr aus PVC-U
Vorgesehener Verwendungszweck	drucklos betriebene erdverlegte Abwasserkanäle und -leitungen
DN	250
Ringsteifigkeit	SN 4
Grenzabmaße	Nach EN 1401-1
Dichtheit (Wasser, Luft)	Keine Undichtheit
Dauerhaftigkeit bei Gebrauch	Dauerhaft – Werkstoff nach EN 1401-1 – Dichtringe nach EN 681-1
Freisetzen gefährlicher Substanzen	KLF

Plastics Pipes and the CE-Marking

prEN 15014 -

Buried and above ground systems for
water and other fluids under
pressure

Plastics Pipes and the CE-Marking

- Cluster standard for the materials PVC-U, PE, PP, GFK, PVC-C, PB, PVDF, PVC-O, compound pipes
- **Minimum requirements** (classification of reaction to fire, external and internal pressure strength, dimensions, tightness, durability)
- **Conformity attestation system basically 4**
- **If reaction to fire is relevant, system 1 or 3 just for this property**; other properties are subject to system 4

Plastics Pipes and the CE-Marking

- Conformity is assessed by classification into 4 dimension groups and 3 type groups for fittings
- Type testing on 1 product per group, FPC defined by the manufacturer and documented (met, if the system is operated according to EN ISO 9001)
- Property-requirements do not apply, if the country does not have statutory stipulations on the property for the product's intended use (marking NPD).

Plastics Pipes and the CE-Marking

Table 1 — Size groups

Size group	Range of nominal diameters, d_n	
	for thermoplastics material	for thermosetting plastics
1	$d_n \leq 63$	$d_n \leq 100$
2	$63 < d_n \leq 225$	$100 < d_n \leq 600$
3	$225 < d_n \leq 630$	$d_n > 600$
4	$d_n > 630$	—

Table 2 — Type groups

Type group	Thermoplastics piping components
1	Bends
2	Elbows and tees
3	Other fittings

Plastics Pipes and the CE-Marking

Table 3 — Type testing of pipes and fittings

Essential characteristics	Requirement clause of this standard	Testing relevant to ^a			Acceptance
		I	M	E	
Reaction to fire	4.1	+ ^b	+ ^b	—	see classification in EN 13501-1
External pressure strength	4.2	+	+	+	pass/fail
Internal pressure strength	4.3	+	+	+	pass/fail
Dimensional tolerances	4.4	+	—	+	pass/fail
Tightness of joints	4.5	+	+	+	pass/fail
Durability	4.6	+	+	+	by the classification of the long-term strength performance
Release of dangerous substances	4.7	+ ^b	+ ^b	—	pass/fail
^a I is initial type test in case of new system; M is change of material; E is extension of the product range. + denotes testing relevant for the characteristic-occurrence-combination. ^b Only to be performed if subject to regulatory requirements.					

Plastics Pipes and the CE-Marking

Table ZA.1 — Relevant clauses

Essential characteristics	Requirement clauses of this standard	Levels and/or classes	Notes
Reaction to fire	4.1	A to F	see classification in EN 13501-1
External pressure strength	4.2	none	pass/fail
Internal pressure strength	4.3	none	PN
Dimensional tolerances	4.4	none	pass/fail
Tightness: Gas and liquid	4.5	none	pass/fail
Durability	4.6	none	classification of long-term strength performance
Release of dangerous substances	4.7	none	

Plastics Pipes and the CE-Marking

Table ZA.2 — System of attestation of conformity

Products	Intended use	Level or class	Attestation of conformity
Pipes, fittings and their joints	Above-ground pressure piping systems subject to reaction to fire regulations	A1*, A2*, B* and C* A1**, A2**, B**, C**, D and E (A1 to E)*** and F	1 a, b 3 a, b 4 a, b
	Buried or above-ground pressure piping systems not subject to fire regulations	None	4 a
<p>* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).</p> <p>** Products/materials not covered by footnote (*).</p> <p>*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 98/603/EC, as amended).</p>			
<p>^a System 1: See Directive 89/106/EEC (CPD) Annex III.2 (i), without audit testing of samples. System 3: See Directive 89/106/EEC (CPD) Annex III.2 (ii), second possibility. System 4: See Directive 89/106/EEC (CPD) Annex III.2 (ii), third possibility.</p> <p>^b System 1 or 3 shall be applied for the characteristic "reaction to fire", for other characteristics System 4 shall be applied.</p>			

Plastics Pipes and the CE-Marking

Table ZA.3 — Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 1

Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1
Task for the notified body	Factory production control (FPC) ^a	Reaction to fire	6.1
	Initial type testing	Reaction to fire	6.1

^a The factory production control tests to be realized by the manufacturer will be chosen with the notified body on the basis of existing reaction to fire test methods.

Plastics Pipes and the CE-Marking

Table ZA.4 — Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 3

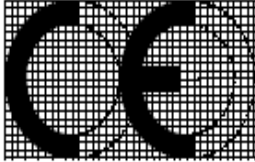
Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1
Task for the notified body	Initial type testing	Reaction to fire	6.1

Plastics Pipes and the CE-Marking

Table ZA.5 — Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 4

Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Except for "reaction to fire", parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1

Plastics Pipes and the CE-Marking

	
01234	
AnyCo Ltd, P.O. Box 123, CH-12345	
05-11	
01234-CPD-00234	
EN 15014	
Name and material	Pipe of PVC-U
Intended use	Pressure pipes for water (not for human consumption) or other fluids
d_n	250
PN	10
Dimensional tolerances	Conforming to EN 1452-2
External pressure strength	NPD
Tightness (water, air)	No leakage
Reaction to fire	F
Durability	- Conforming to EN ISO 12162; - Sealing rings conforming to EN 881-1
Release of dangerous substances	NPD

Plastics Pipes and the CE-Marking

prEN 15015 -

Systems for hot and cold water not
intended for human consumption

Plastics Pipes and the CE-Marking

- Cluster standard for materials PP, PE-X, PVC-C, PB, compound pipes
- **Minimum Requirements** (classification of reaction to fire, internal pressure strength, resistance to high temperature, dimensions, tightness, durability)
- **Conformity attestation system basically 4**
- If reaction to fire is relevant, **system 1 or 3 just for this property**; other properties are subject to system 4

Plastics Pipes and the CE-Marking

- Conformity is assessed by classification into 2 groups for working pressure levels, 3 size groups and 3 groups of types for fittings
- Type testing on 1 product per group, FPC defined by the manufacturer and documented (met, if the system is operated according to EN ISO 9001)
- Property-requirements do not apply if the country does not have statutory stipulations on the property for the product's intended use (marking NPD).

Plastics Pipes and the CE-Marking

Table 3 — Pressure groups

Pressure group	Design pressure, P_D bar
1	≤ 6
2	> 6

Table 4 — Size groups

Size group	Range of nominal diameters, d_n
1	$d_n \leq 63$
2	$63 < d_n \leq 160$

Table 5 — Fitting groups

Fitting group	Fittings
1	Bends
2	Elbows and tees
3	Reducers, couplers, end caps
4	Unions, flange adaptors, adaptor pieces and/or their plastics parts

Plastics Pipes and the CE-Marking

Table ZA.1 — Relevant clauses

Essential characteristics	Requirement and clauses in this standard	Levels and/or classes	Notes
Reaction to fire	4.1	A to F	see classification in EN 13501-1
Internal pressure strength and resistance to high temperature	4.2	none	P _D bar /Class
Dimensional tolerances	4.3	none	pass/fail
Tightness	4.4	none	pass/fail
Durability	4.5	none	pass/fail
Release of dangerous substances	4.6	none	

Plastics Pipes and the CE-Marking

Table ZA.2 — System of attestation of conformity

Products	Intended use	Level or class	Attestation of conformity
Pipes, fittings and their joints	Hot and cold water not for human consumption and heating systems subject to reaction to fire regulations	A1*, A2*, B* and C* A1**, A2**, B**, C**, D and E (A1 to E)*** and F	1 a, b 3 a, b 4 a, b
	Hot and cold water not for human consumption and heating systems not subject to reaction to fire regulations	None	4 a
<p>* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).</p> <p>** Products/materials not covered by footnote (*).</p> <p>*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC, as amended).</p>			
<p>^a System 1: See Directive 89/106/EEC (CPD) Annex III.2 (i), without audit testing of samples. System 3, see Directive 89/106/EEC (CPD) Annex III.2 (ii), second possibility. System 4, see Directive 89/106/EEC (CPD) Annex III.2 (ii), third possibility.</p> <p>^b System 1 or 3 shall be applied for the characteristic "reaction to fire", for other characteristics System 4 shall be applied.</p>			

Plastics Pipes and the CE-Marking

Table ZA.3 — Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 1

Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1
Task for the notified body	Factory production control (FPC) ^a	Reaction to fire	6.2
	Initial type testing	Reaction to fire	6.1

^a The factory production control tests to be realized by the manufacturer will be chosen with the notified body on the basis of existing reaction to fire test methods.

Plastics Pipes and the CE-Marking

Table ZA.4 — Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 3


Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1
Task for the notified body	Initial type testing	Reaction to fire	6.1

Plastics Pipes and the CE-Marking

Table ZA.5 – Assignment of evaluation of conformity tasks for pipes, fittings and their joints under system 4

Tasks		Content of task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Except for "reaction to fire", parameters related to all relevant characteristics of Table ZA.1	6.2
	Initial type testing	Except for "reaction to fire", all relevant characteristics of Table ZA.1	6.1

Plastics Pipes and the CE-Marking

	
01234	
AnyCo Ltd, P.O. Box 123, SE-12345	
05-01	
01234-CPD-00234	
EN 15015	
Name and material	Pipe of PE-X
Intended use	Hot and cold water not intended for human consumption and heating systems
DN	16
Design pressure/ class	6 bar/Class2
Dimensional tolerances	Conforming to EN ISO 15875-2
Tightness	No leakage
Reaction to fire	NPD
Durability	In accordance with ISO 10508 No leakage (EN 12293) Sealing rings conforming to EN 681-1
Release of dangerous substances	NPD

Plastics Pipes and the CE-Marking

The CE - marking is ...

- not a quality mark,
- not a standard conformity mark,
- not a certification mark to be granted or withdrawn,

but

- shows the conformance with statutory provisions and
- Leads to assume that the provisions of the hEN may be observed

- Why product certification?
- The statutory sector
 - CE-Marking
 - EAS-Mark
- The „voluntary sector“
- Summary & outlook



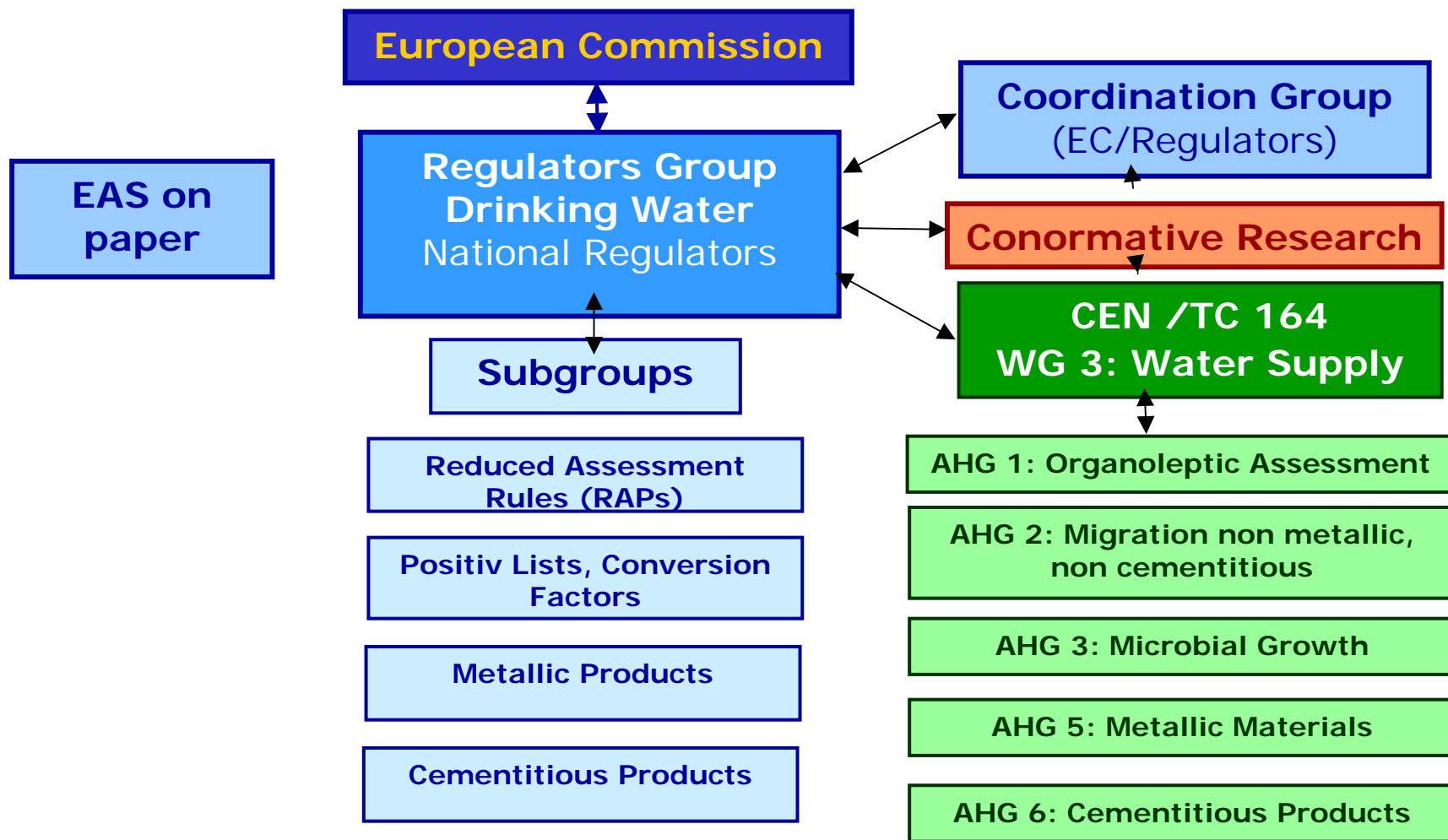
The Drinking Water Directive

- Approval through migration tests and positive-lists; heterogeneous threshold values codified in national legislation
- **Vienna Agreement 1994**: European standardization makes only sense in case of simultaneous regulation of uniform threshold values throughout whole Europe
- > 2008: **Approval system EAS** (European Acceptance Scheme) for products in contact with drinking water

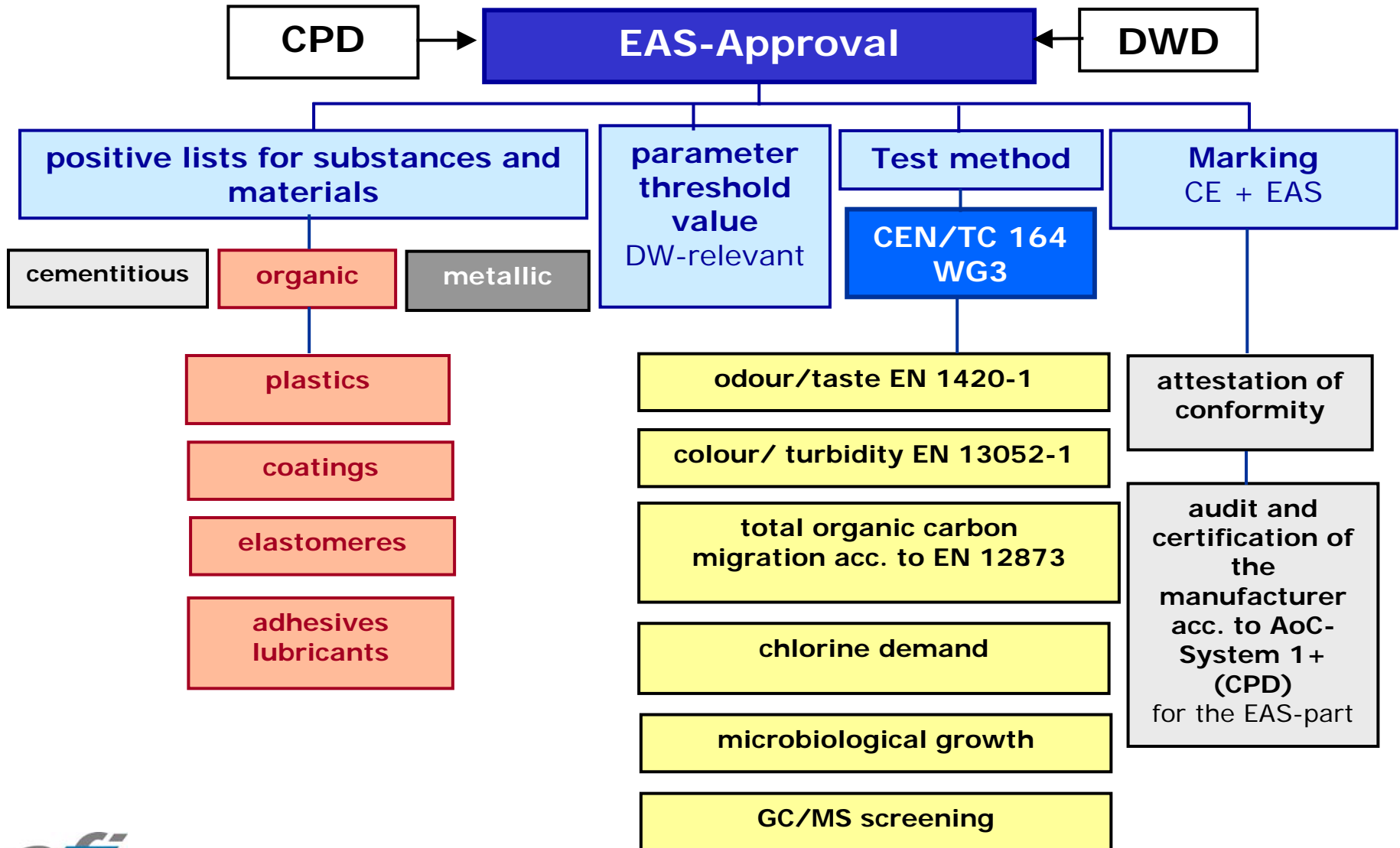
The Drinking Water Directive

- As far as building products in contact with drinking water are concerned, directives 89/106/ EEC (CPD) and 98/83/EEC (DWD) have to be observed
- **Aim:** High quality drinking water for the consumer
- **The aims of EAS are comparable to those of CE** (harmonization, removal of trade barriers, lowering of approval costs)
- **System of conformity attestation (AoC) 1+**, which means that the certification body is in any case involved
- In addition to the CE-marking, the EAS-Mark can also be affixed to the product

Plastics pipes and the EAS-Mark



Plastics pipes and the EAS-Mark



Plastics pipes and the EAS-Mark

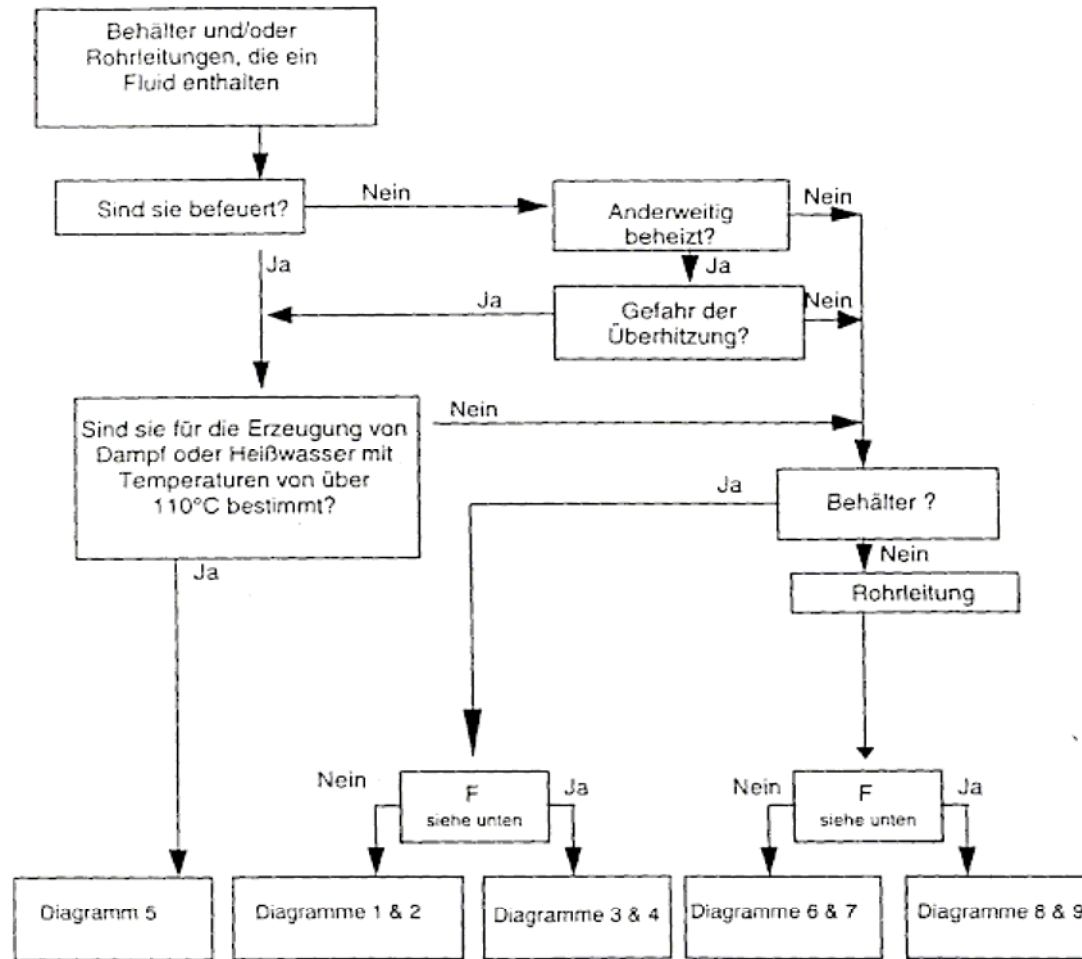
How to get an EAS-Mark ...

- **Application** at the Notified Body, including **disclosure of the recipe**
- Examination of conformity with **EAS-positive list**, **toxicological evaluation** of „new“ materials
- **Audit, sampling** by the testing- and inspection body and afterwards test:
 - Step 1: Sensory testing, TOC and chlorine demand
 - Step 2: Toxicological evaluation of unlisted substances
 - Step 3: Microbiologic growth and cytotoxicity
- **Certification and inspection acc. to AoC 1+**

Pressure Vessel Directive

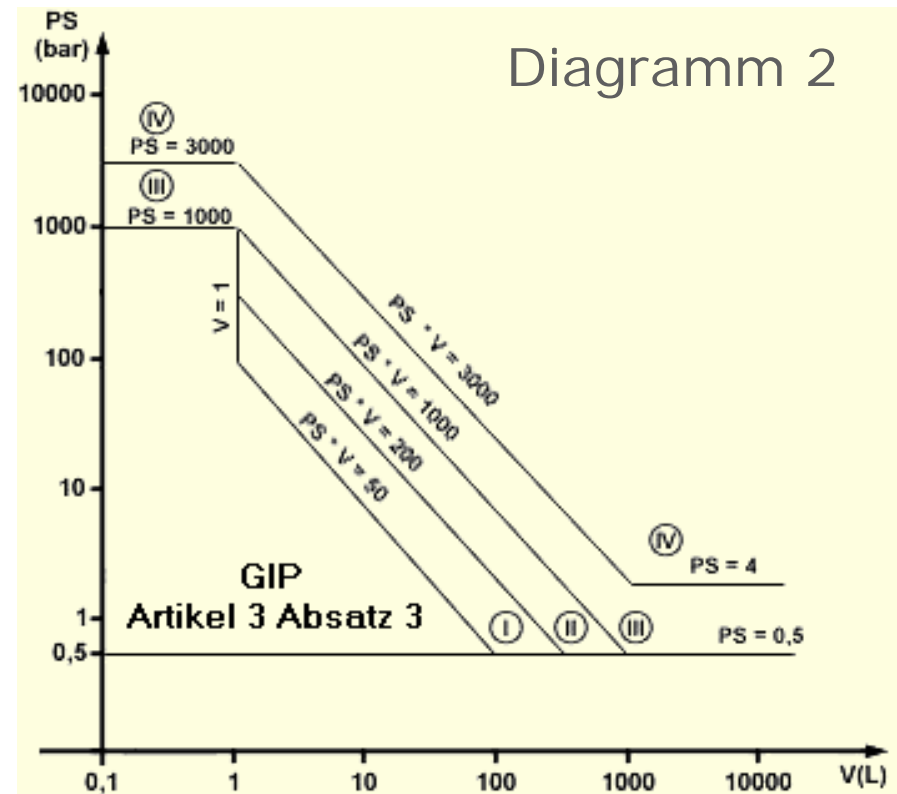
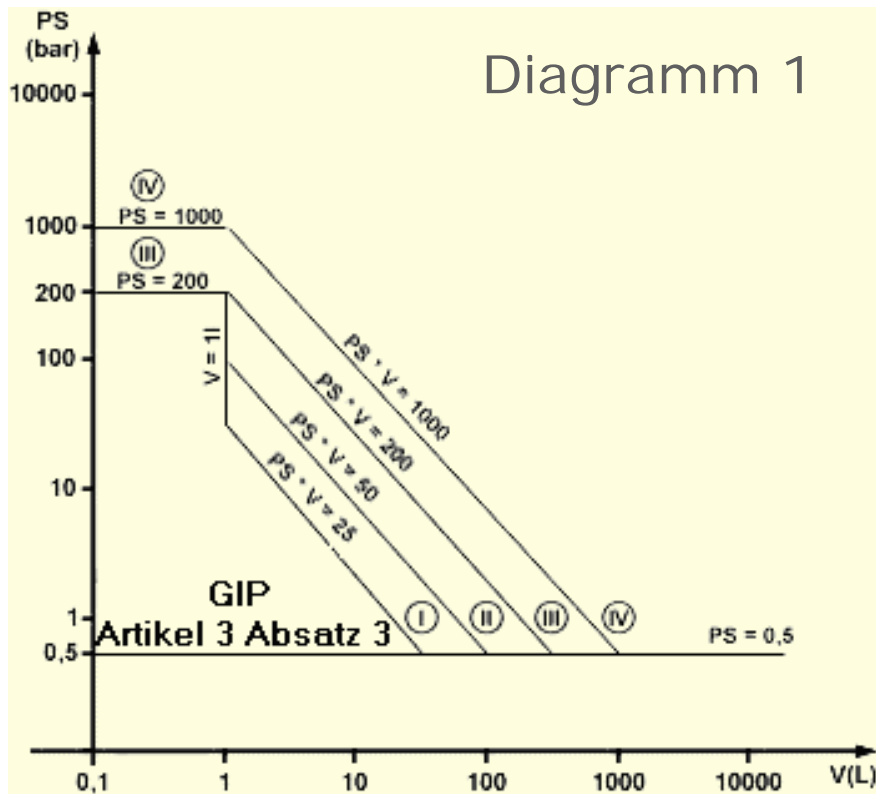
- Applies to equipment with a maximum admissible pressure (PS) of **at least 0,5 bar**
- „Pressure equipment“ means vessels, pipes, safety accessories, and pressure accessories
- NOT covered by the directive are, amongst others, piping networks for the supply, distribution, and discharge of water
- The directive covers, amongst others, GRP-vessels, piping in industry, refrigeration piping
- Conformity assessment through modules (A to H) according to the PVD

Pressure Vessel Directive

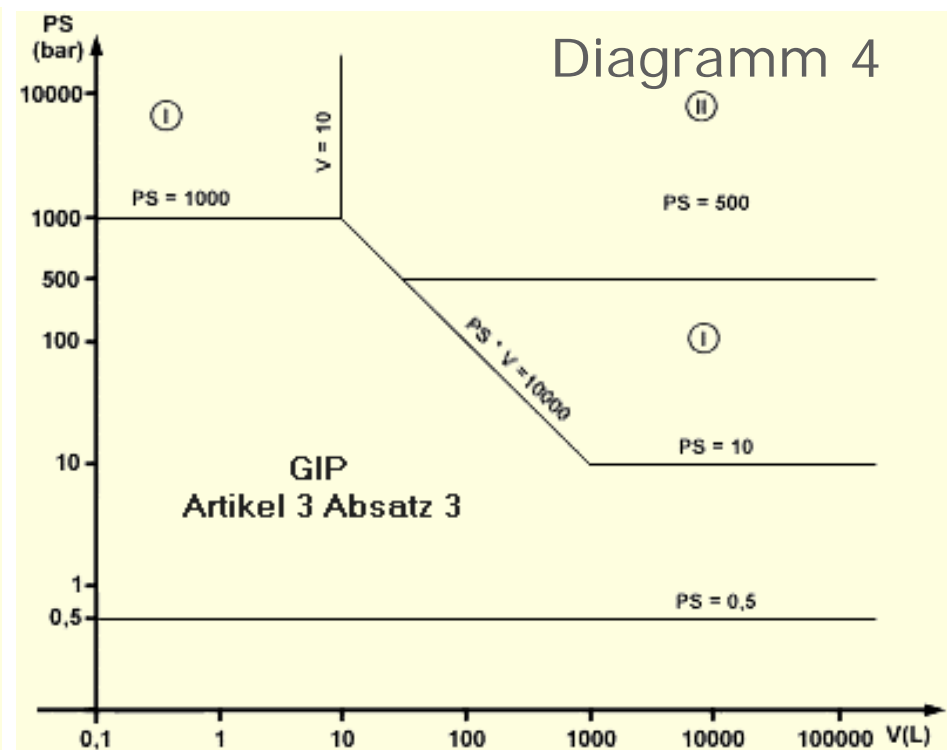
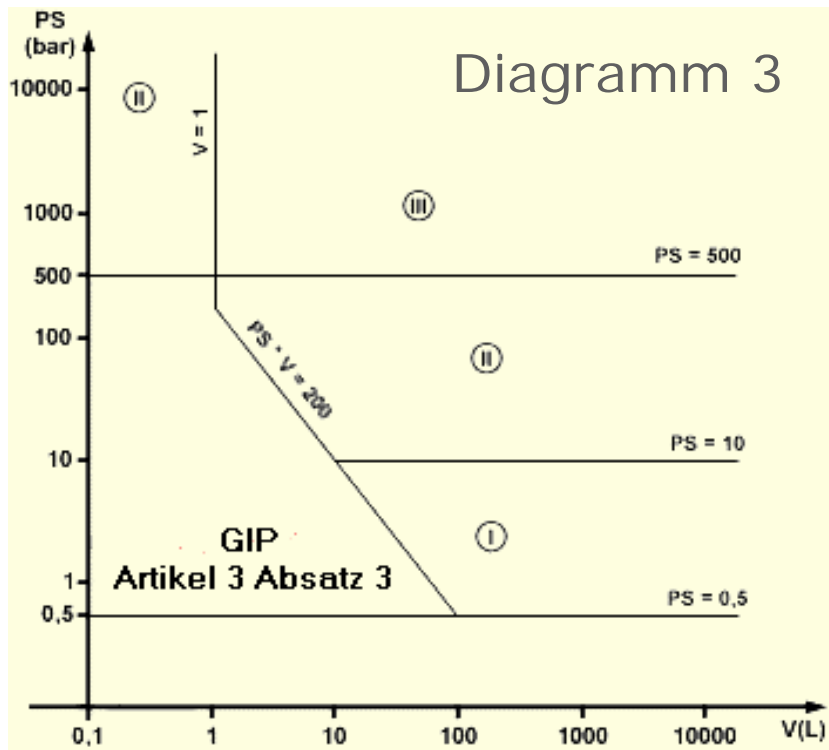


F: Enthält der Behälter oder die Rohrleitung eine Flüssigkeit, deren Dampfdruck bei der zulässigen maximalen Temperatur nicht mehr als 0,5 bar über dem normalen atmosphärischen Druck liegt ?

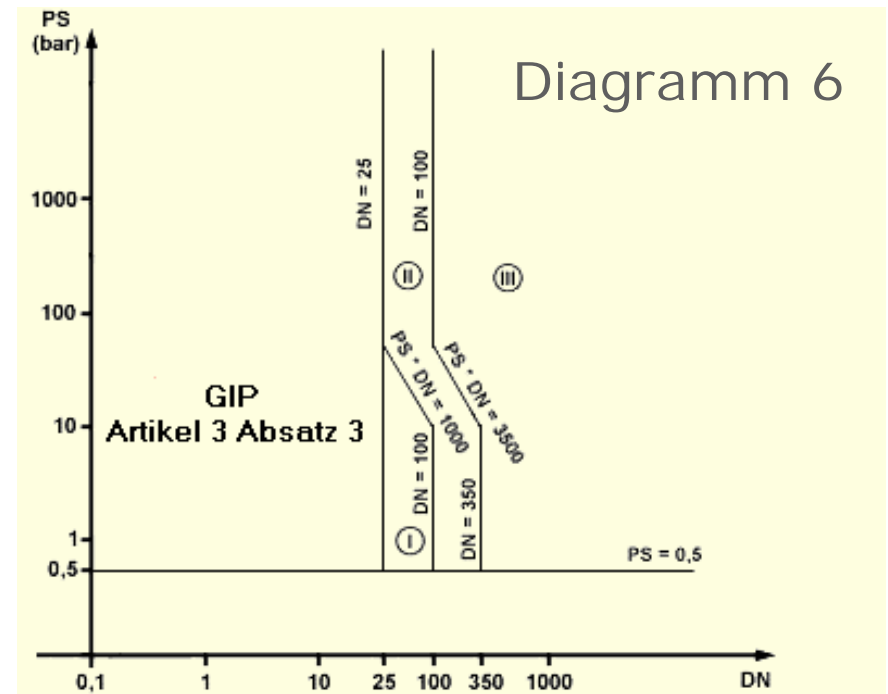
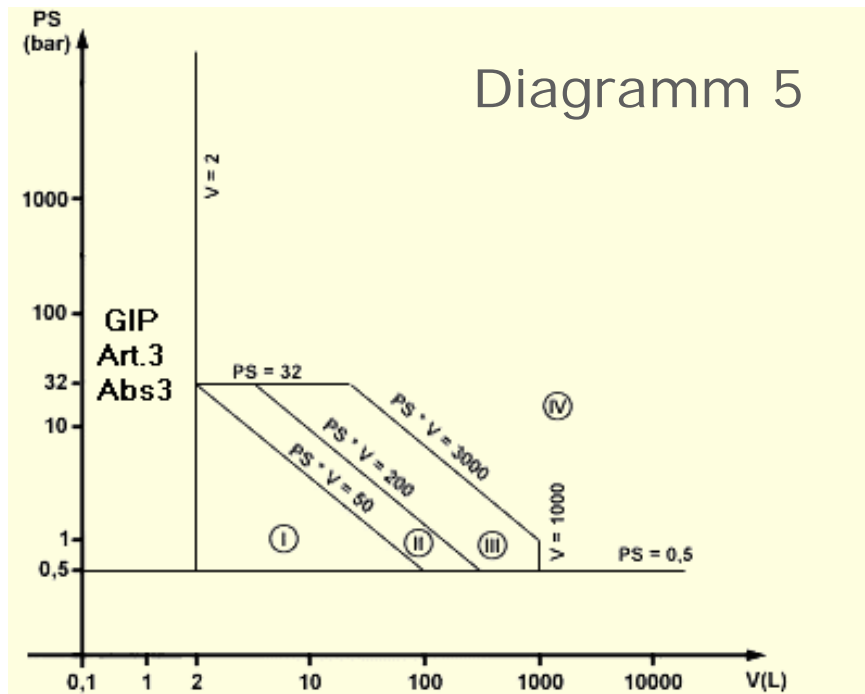
Pressure Vessel Directive



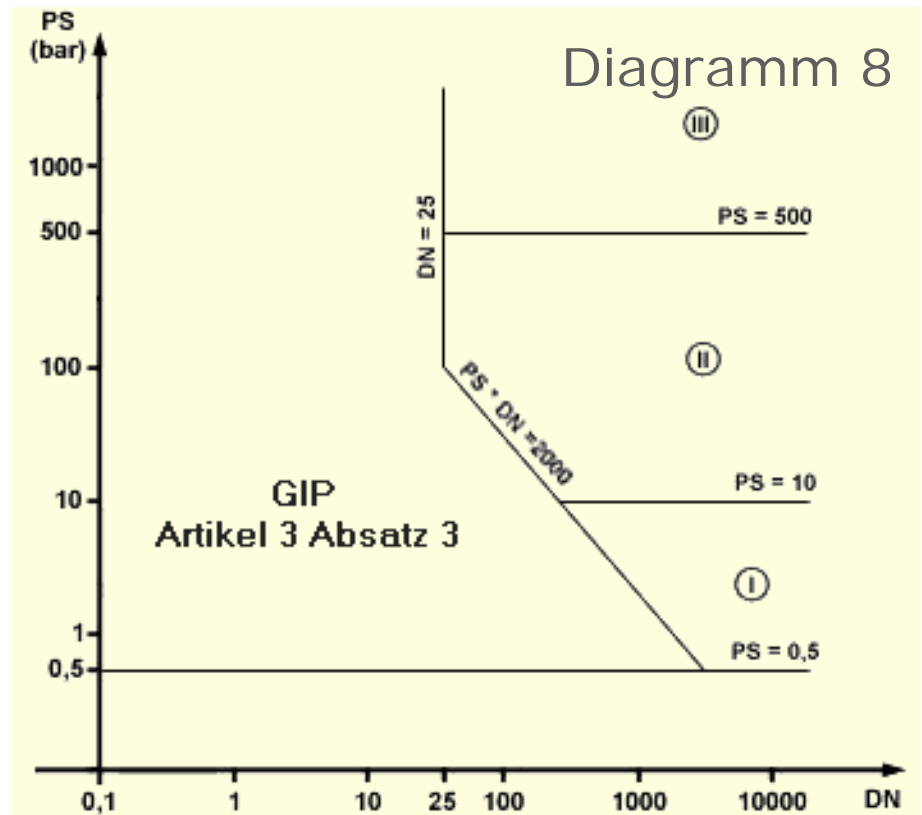
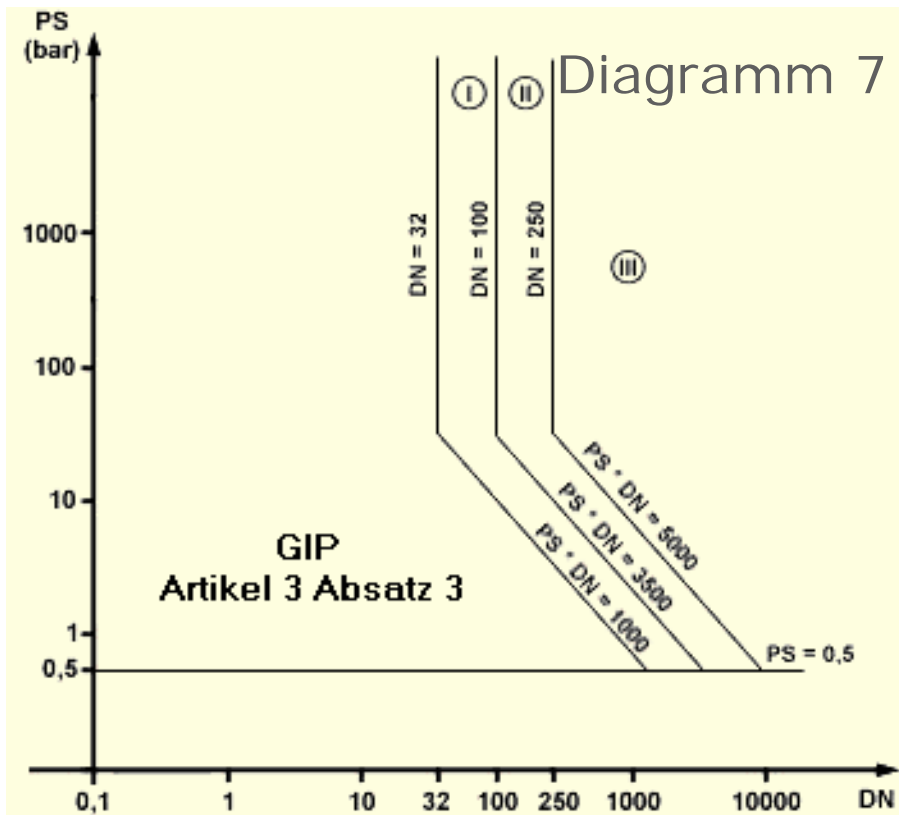
Pressure Vessel Directive



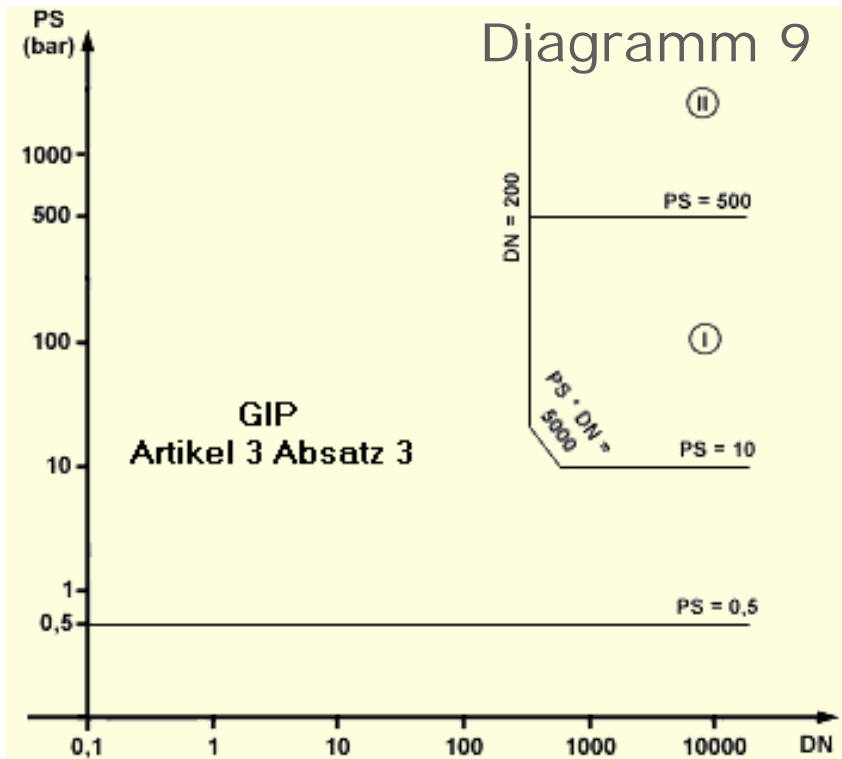
Pressure Vessel Directive



Pressure Vessel Directive



Pressure Vessel Directive



- A... Internal production control *)
- A1... Module A + monitoring of the final assessment *)
- B... EC-type examination
- B1... EC-design examination

- I Module A
- II Modules A1, D1, E1
- III Modules B1 + D, B1 + F, B + E, B + C1, H
- IV Modules B + D, B + F, G, H1

C1... Conformity to type

D, D1... Production quality assurance

E, E1... Product quality assurance

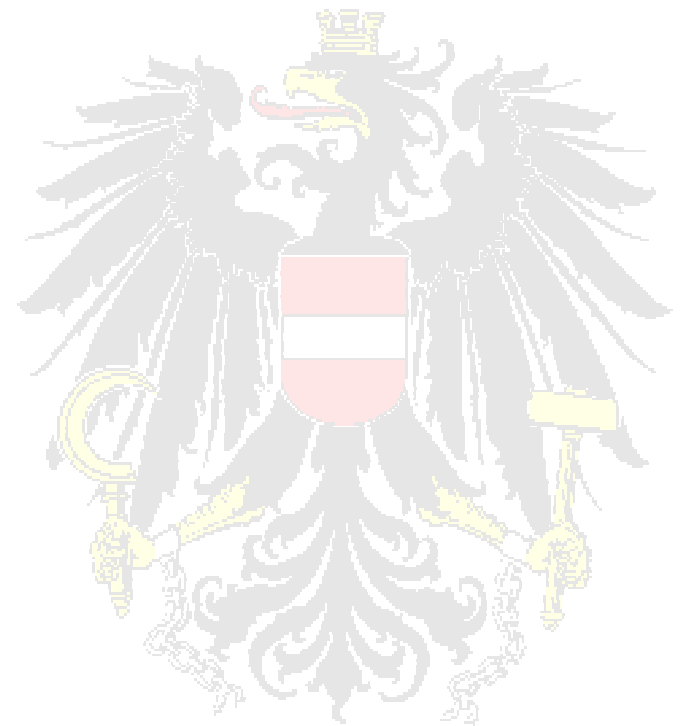
F... Product verification

G... EC unit verification

H... Full quality assurance

*) Notified Body not necessary

- Why product certification??
- The statutory sector
 - CE-Marking
 - EAS-Mark
- The „voluntary sector“
- Summary & outlook



„Voluntary“ Sector

- CE-Marking says nothing about the product's quality. It is a declaration by the manufacturer
- Marks in the „voluntary sector“ (ÖNORM, ÖVGW, GRIS, *ofi* – CERT) document the excellent quality of the products
- The „voluntary sector“ is **not authorized by law**
- Certification and award of the mark is effected by the certification body

- Why product certification?
- The statutory sector
 - CE-Marking
 - EAS-Mark
- The „voluntary sector“
- Summary & outlook

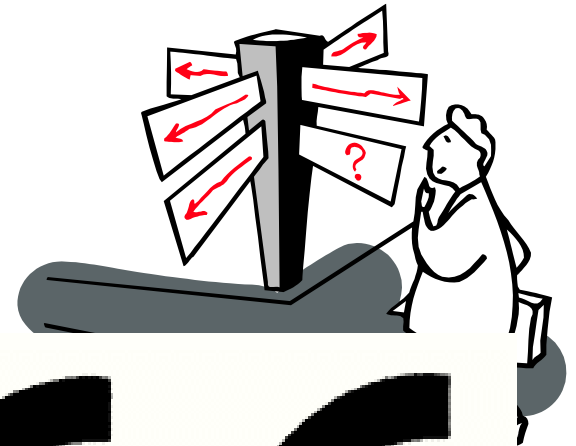


Summary & Outlook

- Because of the thus originating authorization to place products on the market, there is no way around the CE- and EAS-Mark
- The CE-Marking is not a quality mark; it is a „passport“ in the EEC
- Marks in the „voluntary sector“ (e.g. ÖNORM, ÖVGW, GRIS, *ofi* - CERT) document high quality and the compliance with regionally specific requirements

Thank you for your attention

Notified Body *ofi* - CERT
DI Udo Pappler
Arsenal, Objekt 213
1030 Vienna
udo.pappler@ofi.co.at



CE