The current version of EN 12115 presents changed and amplified definitions regarding the required electrical conductivity of chemical hoses.

For each member country, EN standards are adopted into a National version. Since 1999, the German EN 12115 version has required that "OHM" hoses would need electrical conductivity through the hose wall (max. electrical resistance 10^9 Ω). This now has been universally adopted in the standard.

Wherever the EN 12115 is valid, the new safety requirements are applicable: Ω (and M) hoses used in explosive environments must have an electrical resistance through the tube wall of maximum 10^9 Ω. To indicate this property, these hoses are identified as **Ω/T** respectively **M/T** hoses.

Hose assemblies with an electrical resistance through the hose wall of greater than 10^9 Ω are marked with **M** or **Ω** respectively.

The marking of Elaflex chemical hoses has been changed to the new requirements from manufacturing date September 2011.

The following table summarizes the changes.

***new* Ω marking:**
hose is suitable for explosive mixtures
(explanations overleaf)

***new* Ω/T marking:**
hose is suitable for explosive mixtures
and for explosive environments
(explanations overleaf)

	Ω (12115 old)	**Ω** (12115:2011)	**Ω / T** (12115:2011)	M (12115 old)	**M** (12115:2011)	**M / T** (12115:2011)
Electrical conductivity (resistance) measured between hose end fittings	max. 10^6 Ω	max. 10^6 Ω	max. 10^6 Ω	max. 10^2 Ω	max. 10^2 Ω	max. 10^2 Ω
Electrical conductivity through the hose wall, resistance max. 10^9 Ω	only required in Germany	no	yes	no	no	yes
Official EN 12115 terms regarding electrical conductivity	dissipative	conductive	conductive	conductive	electrically bonded	electrically bonded
ELAFLEX hose types		EFL (Fluorline) EFD/EFS (Elaflon) FEP (Elaflon Plus FEP)	HD / HD-C / FHD / XHD TW / LTW / XTW CHD / CHS (lilac band) LMD / LMS (blue band) UTD / UTS / UTL (blue-white-blue) PCD/PCS (Polypal Clean) PTFE (Elaflon PTFE) FXD (Fluorflex 2) Polypal Plus / Chemopal Tecnopal / Solvapal		LBD / LBS (white band)	–

Example **ELAFLON PLUS FEP** - max. 10^6 Ohm resistance between hose end fittings - not conductive through the hose wall.
According EN 12115 so far classified as M hose, **according EN 12115 : 2011 now an Ω hose**.

Example **ELAFLON PTFE** - max. 10^6 Ohm resistance between hose end fittings - max. 10^9 Ohm through the hose wall.
According EN 12115 so far classified as Ω hose, **according EN 12115 : 2011 now an Ω/T hose**.

Electrical conductivity of hose assemblies - Use in explosive environment

Hose assemblies can build up electrostatic energy, due to the medium passing through them, or due to e.g. pulling over the ground. If not dissipated, the charge can reach such a high energy level that for example coupling the hose might create a spark that brings an explosive mixture to ignite.

To avoid this dangerous situation, hoses used for liquids

- whose gases can form explosive mixtures and / or

- which are used in an explosive environment

have to conform to European and international regulations for their safe construction. An important constructional property is the electrical resistance between the hose end fittings.

When safety requirements are highest, EN 12115 : 2011 and IEC 60079-32-1 : 2011 (basis of EN 12115 regarding electrostatic safety) call for additional safety measures. This is i.e. the case if the hose assembly is used *entirely or to a major part* within an explosive environment (Ex zone). In this case, an electrical charge on the inner surface of the hose lining must be able to be safely dissipated through the hose wall (IEC 60079-32-1 : 2011, 7.7.3.4). The resistance of the hose wall may not exceed 10^9 Ω.

On the other hand, if a hose assembly is used under normal conditions (e. g. for filling a container where an Ex zone usually is confined to the coupling area only), the hose wall is not required to be electrically conductive (IEC 60079-32-1 : 2011, 7.7.3.4, Table 17).

Guidelines for the selection of chemical hoses according EN 12115 : 2011

Ω/T = for highest safety requirements. The complete hose assembly consists of electrically conductive rubber blends. Conductivity 10^9 Ω through the hose wall. Suitable for explosive mixtures inside, *and* for the use in hazardous areas (hose entirely or to a major part within an Ex zone). Suitable for media of explosion group higher than IIA (IIB or IIC). Also suitable for critical, non-conductive chemicals like toluene.

Ω = High security due to conductive rubber mixtures. Suitable for normal use, for example as a filling hose for liquids of explosion group IIA. If the hose is only partially used in a hazardous area - e.g., the Ex zone is confined to the coupling area which is mostly the case - the use of an Ω hose is admissable.

M/T = Principally this type can be used as Ω/T hoses. However, contrary to Ω and Ω/T hose assemblies it must be considered that the electrical conductivity of M/T (and M) hoses is created by metallic conductors. The electrical connection within the tube is subject to high loads. In the worst case it can be broken. Regular monitoring of the conductivity is recommended. Further, the use of M/T (and M) hose assemblies should be avoided when so-called stray currents can be expected in the environment of the hose.

M = Suitable for normal use, for example as a filling hose for liquids of explosion group IIA, but this type is subject to the same restrictions as M/T hoses.