T-TYPE HYGIENIC

Resistance of materials to detergents/disinfectants used in the food industry

ILME T-TYPE/H and T-TYPE/C enclosure materials have been selected to guarantee compatibility with the principal alkaline or acid detergents and disinfectants used in the food industry. In particular, series T-TYPE/H and T-TYPE/C enclosures have been tested according to protocol **F&E/P3-E n. 40-1 by Ecolab,** leading multinational in the detergent sector, to verify their compatibility with the following cleaning fluids:

- **Acid foaming detergents: P3-topax 52, Topaz AC5, P3-topmaxx 520 and P3-topax 56.**
- **Alkaline foaming detergents: P3-topax 19, Topaz MD3 and Ecofoam Basic.**
- **Strong alkaline foaming detergents: P3-topax 36, Topaz HD1 and P3-topax 30.**
- **Alkaline-chloride foaming detergents-disinfectants: P3-topax 66, Ecofoam CL and P3-topax M95.**
- **Non-foaming peracetic based disinfectants: P3-oxonia active, P3-topactive OKTO and P3-topactive DES.**
- **Neutral disinfectants: P3-topax 990 and P3-topax 91.**

- Full immersion of parts in detergent/disinfectant solutions.
- Water hardness of 200ppm $CaCO_3$
- Tests performed at concentrations 30% higher than those normally recommended in technical data sheets.
- Test duration (each detergent): 28 days at 20 °C (equivalent to 6 years of daily cleaning).
- Test solution renewed every 3-4 days for oxidizing products (P3-oxonia active, P3-topactive OKTO, P3-topax 66).
- Test results evaluation: ISO 4068-1 (esthetic appearance and mass loss).

Cleanability and degrees of protection used in the food industry

ECOLAB F&E/P3-E n. 40-1 Test Protocol
see declaration of compatibility at pages 494-495

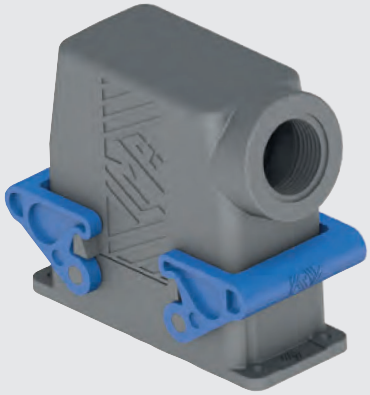
Series T-TYPE/H and T-TYPE/C enclosures have been designed to facilitate cleaning of surfaces that could potentially come into contact with food. For this purpose **Series T-TYPE/H and T-TYPE/C** enclosures have **IP66 and IP69 degrees of protection as per IEC 60529 Edition 2.2 (2013-08)** to allow jet washing, as typically used in the food industry.

The suitability of ILME products for the **cleanability** requirements stated by Machinery Directive 2006/42/EC for both Splash and Food Area zones (EN 1672-2 and EN ISO 14159) **depends on the specific installation of ILME products on the machine and must be evaluated by the machine manufacturer**.

In addition to the Hygienic version, aluminium enclosures are also available with degrees of protection up to IP68 (check for possible applicability).

HYGIENIC T-TYPE/H
for food & beverage

HYGIENIC T-TYPE/C
for low temperatures



Declaration of compatibility - By courtesy of ECOLAB s.r.l.

DECLARATION OF COMPATIBILITY

between ECOLAB hygiene products
and ILME enclosures for multipole connectors

For the completely safe cleaning of your plant

The ideal partner for Industrial Connections for power supply of plug connected devices, connections for auxiliary circuits and automation control:

T-type H and T-type C enclosures

Supplier of hygiene solutions for Food and Beverage industries

Products

Equipments

Services

The declaration proves the high resistance of these enclosures to Ecolab products commonly and worldwide used in Food and Beverage Industries.

ILME S.p.a.
Via Marco Antonio Colonna, 9 - 20149 Milano (MI)
www.ilme.com

Ecolab s.r.l.
Via Paracelso 6 – 20864 Agrate Brianza (MB)
www.it.ecolab.eu

Compatible products with T-type/C and T-type/H ILME enclosures

See below for the test procedure

PRODUCT	%	T-TYPE ENCLOSURE	DEFECT QUANTITY	DEFECT QUALITY	COLOR VARIATION
P3-topax 52 - Topaz AC5	6	C and H	0	0	0
P3-topax 19 - Topaz MD3	6	C and H	0	0	0
P3-topax 36 - Topaz HD1	6	C and H	0	0	0
P3-topax 91	6	C and H	0	0	0
P3-topax 990	6	C and H	0	0	0
P3-oxonia active	1	C and H	0	0	0
P3-topactive okto	3	C and H	0	0	0
P3-topax 66	6	C and H	0	0	0

DEFECT QUANTITY: 0 means - No detectable defect
DEFECT QUALITY: 0 means - Up to 10x magnification no detectable defect
COLOR VARIATION: 0 means - Unchanged, no discoloration

Test procedure

- Test performed by Ecolab Technical Application Service
- Ecolab reference method 40.1 – ISO 4068-1 for the evaluation
- Full immersion of parts in detergent/disinfectant solutions
- Water hardness of 200ppm $CaCO_3$
- 28 days total time at 20°C (equivalent to the contact time that occurs in 6 years of daily cleaning)
- Concentrations tested 30% higher than those normally recommended
- Test solution renewed every 3-4 days for oxidizing products (P3-oxonia active, P3-topactive OKTO, P3-topax 66)

Final statement

- The Ecolab Technical Application Service Italy certifies that the ILME enclosures for multipole connectors T-type/C and T-type/H are perfectly compatible with the above listed Ecolab detergents and disinfectants used in a concentration 30% higher than those normally recommended.

February 2016

HYGIENIC

Requirements on materials in contact or that may come into contact with food products

T-TYPE/H and T-TYPE/C materials have been selected to satisfy the requirements of EHEDG Guideline n° 32 “Materials of construction for food equipment in contact with food” and point 2.1.1, letter a) in Annex I of the Machinery Directive 2006/42/EC. Paragraph 91 of the Guide to the application of Machinery Directive 2006/42/EC specifies that the reference at Annex I, point 2.1.1, letter a) of the directive must be considered as a reference to EC regulation n. 1935/2004 and directive 2002/72/EC.

EU commission regulation n. 10/2011 dated 14 January 2011, concerning plastic material and objects designed for contact with food products, is a specific measure as provided for by article 5, paragraph 1 of the above-mentioned EC regulation n. 1935/2004.

It defines specific regulations for plastic materials and objects in order to guarantee their use in safe conditions and supersedes commission directive 2002/72/EC dated 6 August 2002 on plastic materials and objects designed for contact with food products. Art. 2, section 2 of the above-mentioned EU regulation n. 10/2011 specifies that rubber and silicone do not fall within the field of application of the regulation. EU regulation n. 10/2011 provides for the use of materials in positive lists of technological monomers, additives and adjuvants and the passing of global and specific migration tests in food simulants.

ILME T-TYPE/H and T-TYPE/C series enclosure materials have been selected according to EU n. 10/2011 regulation requirements and each component has been tested according to EU regulation n. 10/2011 and EC regulation n. 1935/2004.

Furthermore, T-TYPE/H and T-TYPE/C series gasket materials have been formulated according to FDA Guideline 21 CFR §177.2600 and T-TYPE enclosures and levers materials complying with FDA, 21 CFR, §177.1520 (a)(3)(i)(c)(1), (b) and (c)3.1a.

HYGIENIC

Risk Assessment and Critical Control Points in the food industry

Companies that work in the food sector must implement HACCP, i.e. Hazard Analysis and Critical Control Points system (EC Regulation 852/2004 on food product hygiene in force since 01/01/2006) and can voluntarily apply for various certificates (ISO 22000, BRC, ISF, etc.).

All those involved in primary food production (harvesting, milking, breeding), its preparation, transformation, manufacturing, packaging, storage, transport, distribution, handling, sales or supply, including consumer catering, are required to implement an HACCP system, i.e. a series of procedures aimed at preventing food contamination hazards. HACCP is based on monitoring food processing points where biological, chemical or physical contamination hazards may arise. In 2006, HACCP was made mandatory for companies that deal with the food for animals (production of raw materials, mixtures and additives).

A company required to implement HACCP can initially divide its food processing machinery into three zones from the point of view of risk for food product hygiene. The choice of the zone in which the wiring and connectors are installed depends on the risk assessment the manufacturer must conduct as per Machinery Directive 2006/42/EC which, in chapter 2.1, sets out the additional requirements for the food industry (see Table 1).

Table 1. According to EN 1672-2:2009 - Food processing machinery - Basic concepts - Part 2: Hygiene requirements

Application Zones	Zone Requirements	Usable Products
No Food Area: Zone where there is no contact risk with food.	No additional requirement for the food industry.	Enclosures series T-TYPE, T-TYPE/W, C-TYPE, BIG, IP68, C7 IP67, W-TYPE, EMC, COB, …
Splash Area: Zone where components may come into contact with food but there is no risk that the food that came into contact with the components in this area returns to the production cycle.	In this zone, components also come into contact with cleaning agents used in the food industry and must therefore be cleanable and resistant to the washing process (see “Resistance of materials to detergents/ disinfectants used in the food industry” and “Cleanability and degrees of protection used in the food industry”).	Hygienic version enclosures series T-TYPE/H and T-TYPE/C.
Food Area: Zone where components may come into contact with food, with the risk that the food that came into contact with the components in this area returns to the production cycle.	In this zone, in addition to complying with the cleanability and washing requirements, the components are also subject to a series of more stringent requirements aimed at making negligible the risk of food contamination in the process (see paragraph “Requirements on materials in contact or that may come into contact with food products”).	For more information about T-TYPE/C in special version, please contact our Offices.

HYGIENIC

T-TYPE/H & T-TYPE/C

The evolution of T-TYPE insulating enclosures meets food and beverage requirements

The Hygienic multi-pole connector enclosures version (series T-TYPE/H and T-TYPE/C) has been designed for installation on food industry machines and systems.

For this purpose, the following improvements to the T-TYPE series have been made in order to satisfy the requirements laid down by chapter 2.1 of Machinery Directive 2006/42/EC for the machines on which they are installed:

- material cleanability and resistance to the cleaning and sanitising agents normally used in the food industry;
- materials in terms of the requirements for accidental contact with food products.

The T-TYPE/H and T-TYPE/C series enclosures fit different sealing gaskets.

For T-Type/H series enclosures, the sealing gasket is in HNBR rubber, a material with excellent resistance to both acidic and alkaline detergents as well as any animal and vegetable fats it could come into contact with in food industry applications.

For T-TYPE/C series enclosures, the sealing gasket is made by silicone rubber, a material with good resistance to acidic and alkaline detergents as well as animal and vegetable fats. It is also characterised by its improved resistance to low temperatures (series suitable for uses as low as -50 °C), conditions that can arise in food industries that use the cold chain.

A dedicated variant of this new Hygienic version may be used where a high risk of accidental contact with food is occuring during production (see Table 1, Application Zones, Food Area). For more information about this possible special version, please contact our Offices.

In accordance with the requirements set forth in EHEDG Guideline n. 32 “Materials of construction for food equipment in contact with food” (EHEDG = European Hygienic Engineering & Design Group), the closing levers and sealing gaskets are coloured blue to easily identify any accidental contaminations in food products and to facilitate the visual identification of their complete cleanliness.

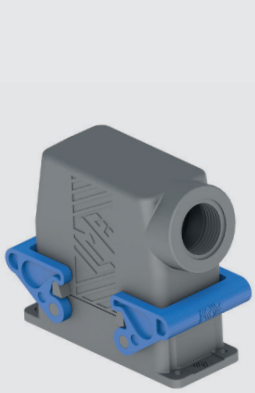
For this purpose, the following improvements to the T-TYPE series have been made in order to satisfy the requirements laid down by chapter 2.1 of **Machinery Directive 2006/42/EC** for the machines on which they are installed:

- material cleanability and resistance to the cleaning and sanitising agents normally used in the food industry;
- materials in terms of the requirements for accidental contact with food products.

T-TYPE/H - PRODUCTION LINES APPLICATIONS

SUM-UP

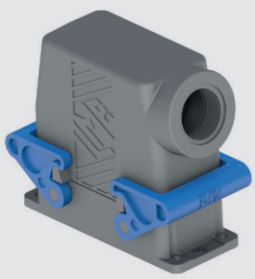
- **Enclosures in thermoplastic material, dark grey RAL 7012 colour, with high thicknesses providing structural solidity and durability**
- **Sealing gaskets made by HNBR rubber formulated in accordance with FDA Guideline 21 CFR §177.2600**
- **Locking levers in metal detectable thermoplastic material, blue colour**
- **M25, M32 and M40 threaded cable entries**
- **IP66 and IP69 degree of protection according to EN 60529**
- **Each enclosure carries its own part number, thread/size and conformity markings**
- **Ambient temperature range: -40 °C / +70 °C**



T-TYPE/C - LOW TEMPERATURE APPLICATIONS

SUM-UP

- **Enclosures in thermoplastic material, dark grey RAL 7012**
- **The Hygienic T-TYPE/C Series enclosures have been specifically designed for food and beverage ambient temperature as low as -50 °C (range: -50 °C / +70 °C)**
- **Enclosures in thermoplastic material, dark grey RAL 7012 colour, with high thicknesses providing structural solidity and durability**
- **IP66 and IP69 degree of protection according to EN 60529**
- **This version differs from the Hygienic T-TYPE/H one for the sealing gaskets made by in accordance with FDA Guideline 21 CFR §177.2600**
- **ILME T-TYPE/C series enclosure materials have been selected according to EU n. 10/2011 regulation requirements and each component has been tested according to EU regulation n. 10/2011 and EC regulation n. 1935/2004**



NOTE: As the characterizing elements of the Hygienic Series are the different sealing gasket material and the different locking lever, hoods and covers without sealing gaskets and locking levers are the same of series T-TYPE Standard.

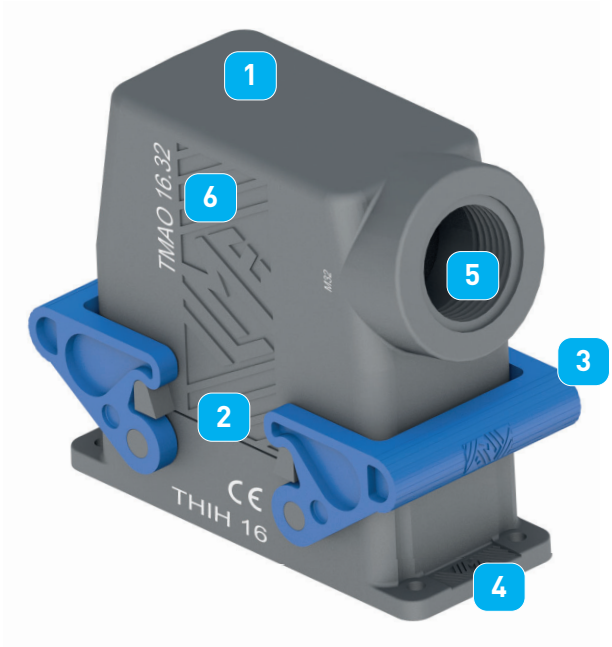
HYGIENIC

T-TYPE/H & T-TYPE/C

FOCUS ON:

1 Construction

By using the BC-MUL® moulding technique together with the use of MIL.BOX® material, **these enclosures are structurally solid and mechanically robust**, due to their increased thickness.
They are particularly resistant to the main pollutants present in industrial environments. The enclosure pegs are built into the enclosures.
The means for fastening the connectors to the enclosures consist of four M3 threaded metal inserts. Compared with metal construction enclosures, which – in order to comply with electrical installation safety norms– must be earthed via a metal connection to the protective earth terminal of the connector insert inside the enclosure, this series of enclosures offers a solution for **total insulation constructions** ⧈ (equivalent to class II) where necessary.
The thermoplastic material used is RAL 7012 dark grey colour and has passed **glow wire** testing (GWEPT) in accordance with the EN IEC 60695-2-11 at **850 °C**, in excess of what required by the intended uses.
The surface mounting, high construction housings are supplied with an open threaded entry and diametrically opposite a closed threaded entry which can be opened by the user if required (with suitable tool).



2 Gaskets

Gaskets have been produced in **HNBR rubber or SILICONE rubber** and have been incorporated in the base flange on bulkhead mounting housings for easier installation.

3 Levers

The locking levers have been produced in **self-extinguishing metal detectable thermoplastic material,** blue colour.
In accordance with the requirements set forth in **EHEDG Guideline n. 32** "Materials of construction for food equipment in contact with food" (EHEDG = European Hygienic Engineering & Design Group), the closing levers and sealing gaskets are coloured blue to easily identify any accidental contaminations in food products and to facilitate the visual identification of their complete cleanliness.

4 Dimensions

The internal dimensions allow mounting of all connector inserts in their relevant sizes. The external dimensions of the bulkhead mounting housings are similar to those of the corresponding metallic enclosures; hole fixing centres are unchanged. Hoods offer an inner cabling space similar to that of the "high" construction models of the corresponding metal enclosures. Other characteristics are in compliance with the applicable safety standard for electrical connectors, **IEC/EN 61984.**

5 Cable entries

The housing and hood cable entries are available with metric thread, respectively:

- **M25 or M32** for smaller sizes "44.27" and "57.27".
- **M32 or M40** for larger sizes "77.27" and "104.27".

The recent standard **IEC/EN 61076-7-100** regarding metric cable entries for multipole electrical connectors for heavy duty uses, which standardises some main dimensions for entries and their related accessories (gaskets, pressure nuts), have been carefully considered in the product design.

6 Markings

Each enclosure carries its own part number and conformity markings.