

Declaration of Conformity

European Standard EN 1736:2008

1. Scope

This document is a declaration of conformity to the European Standard EN 1736:2008 for **QUADRA™ thermoplastic flexible hoses**, manufactured by **Transfer Oil S.p.A.**, used as connection between test points, manometers, pressure switches and oil return or equalization lines in air conditioning and refrigeration units. The permeability of flexible hoses, which also have an environmental impact in terms of global warming and ozone depletion, shall be as low as reasonably possible.

2. Normative reference

The specification **EN 1736:2008**, among other various aspects, regulates the requirements to qualify the permeability rate of non-metallic tubes used in air conditioning and refrigerating systems, including heat pumps. Permeability is measured in grams, permeated from a square meter of the internal surface of the hose during one year (g/m² per year).

Permeability rate	Max permeability at 32 °C at the saturated pressure of the refrigerant	Max permeability at 100°C at the max pressure declared
Class 1	10 g/m ² per year	200 g/m ² per year
Class 2	100 g/m ² per year	1000 g/m ² per year
Class 3	1000 g/m ² per year	5000 g/m ² per year

One square meter of internal surface is equal to approximately 140 linear meters of QUADRA™ DN2, 80 linear meters of QUADRA™ DN4 and 50 linear meters of QUADRA™ DN6.

One linear meter is equal to approximately 0,007 square meters of internal surface of QUADRA™ DN2, 0,013 square meters of internal surface of QUADRA™ DN4 and 0,019 square meters of internal surface of QUADRA™ DN6.

3. Product dimensions and limitations

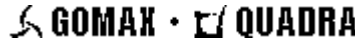
	QUADRA™ DN2	QUADRA™ DN4	QUADRA™ DN6	
Hose part n°	0780C/K/BC/BK	0789C/K/BC/BK	0786C/K/BC/BK	
Hose size	DN2	DN4	DN6	
Hose ID	~2	~4	~6	mm
PS – Max allowable pressure¹	120	120	120	bar
	1740	1740	1740	psi
BP – Min burst pressure	600	600	600	bar
	8700	8700	8700	psi
TS – Min allowable temperature Class	-45	-45	-45	°C
	-50	-50	-50	°F
TS – Max allowable temperature Class	+130	+130	+130	°C
	+266	+266	+266	°F

¹ 60 bar is the max allowable pressure for conventional refrigerant gases, and also the pressure used to perform the permeability test. For CO₂ transcritical use only, the max allowable pressure is 120 bar.

4. Product identification

The product is identified by means of an ink jet printed description including but not limited to manufacturer, product type, pressure and temperature rating, country and date of manufacture, batch reference. Hose identification is in accordance with latest issue of EN 1736:2008. Product traceability is within the Batch number. Printing is longitudinal in black ink on orange hose, and white ink on black hose.

Standard Print Legend for Product Type:

 **GOMAX • QUADRA** - 0780 - DN2 - AC&R HOSE - UNI EN 1736 CLASS 1 @ 60 bar - PS 120 bar / 1740 psi - WT +120 C / 248 F - TS -45 C to +130 C / -49 F to +266 F - MADE IN ITALY - www.gomax.com - <BATCH No>

5. Permeability classification

Transfer Oil declare that all GOMAX® QUADRA™ flexible hoses are **fully compliant to the normative**. Measurement of permeability have been conducted using leak detector mass spectrometer for the measurement of sniffing helium as specified within EN 1736:2008.

Tests results for all GOMAX® QUADRA™ flexible hoses, when calculated according to EN 1736:2008, achieves **CLASS 1** both at 32°C and 100 °C. CLASS 1, as indicated on Normative reference table, is the most stringent permeability category today recognized by the standard.

In reality all GOMAX® QUADRA™ flexible hose are, on average, approximately 95% less than the maximum value allowed as specified by CLASS 1 classification within EN1736:2008.

See attached table.

Transfer Oil S.p.A.

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Test report: B0-TIS-219890-TUV-01-03-12 issued by TÜV Italia

The test method and procedures have been verified by TÜV Italia as third party. As a result of the assessment and inspection of the characteristics and performance of the permeability test machine, of the test procedures utilized, carried out at the premises of Transfer Oil S.p.A. – Italy, TÜV Italia confirms that it meets the requirements of EN 1736:2008



Permeability classification according to the European Standard EN 1736:2008 for non metallic tubes used in air conditioning and refrigeration systems

low permeability



CLASS 1

high permeability

TEST DATA		Test temperature		
		+32 °C	+100 °C	
R404A	Test pressure	14,0	60,0	bar
	QUADRA™ DN2 permeability rate	0,12	8,20	g/m ² /year
	QUADRA™ DN4 permeability rate	0,19	9,10	g/m ² /year
	QUADRA™ DN6 permeability rate	0,13	6,50	g/m ² /year
R407C	Test pressure	13,3	60,0	bar
	QUADRA™ DN2 permeability rate	0,11	7,63	g/m ² /year
	QUADRA™ DN4 permeability rate	0,17	8,46	g/m ² /year
	QUADRA™ DN6 permeability rate	0,11	6,05	g/m ² /year
R410A	Test pressure	18,8	60,0	bar
	QUADRA™ DN2 permeability rate	0,14	7,13	g/m ² /year
	QUADRA™ DN4 permeability rate	0,22	7,92	g/m ² /year
	QUADRA™ DN6 permeability rate	0,15	5,66	g/m ² /year
R134a	Test pressure	7,1	60,0	bar
	QUADRA™ DN2 permeability rate	0,06	8,45	g/m ² /year
	QUADRA™ DN4 permeability rate	0,10	9,37	g/m ² /year
	QUADRA™ DN6 permeability rate	0,07	6,69	g/m ² /year
R744*	Test pressure	73,8	60,0	bar
	QUADRA™ DN2 permeability rate	2,04	5,51	g/m ² /year
	QUADRA™ DN4 permeability rate	0,98	6,12	g/m ² /year
	QUADRA™ DN6 permeability rate	0,45	4,37	g/m ² /year

Figures indicated are average of all the highest obtained values converted from Helium to refrigerant leak rate, as specified within EN 1736:2008.

* test procedures according with the relevant sections of EN 1736:2008 (R744 is not included into the specification). Test at 73,7 bar has been performed at 31°C (the maximum allowable temperature for the refrigerant to have saturated pressure).

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