

# Thermal properties laboratory request form

Testing services at Hukseflux thermal properties laboratory

*This form serves to optimise thermal properties testing and to avoid miscommunication. The requested information allows us to work efficiently as well as safely. In the process of making a quotation we ask you to fill in the form below (ask for this document in MS Word for digital processing), sign it and send it back by email: [info@hukseflux.com](mailto:info@hukseflux.com). In the initial stages of the selection of a measurement method, only the yellow-marked fields should be filled in.*

When offering specimens to Hukseflux for testing purposes, usually for thermal conductivity or total thermal resistance, these have to fulfil certain requirements. Hukseflux cannot handle every material type and every test condition. To name a few common restrictions: the specimen size must match requirements imposed by our equipment, we must be able to safely handle the material and we must be able to work at the right reference conditions, for instance at a prescribed temperature or pressure.

## Procedure

Together with each customer, Hukseflux will **select a measurement method** and **estimate the measurement uncertainty**. Hukseflux will estimate uncertainty based on available specimen dimensions and the estimated order of magnitude of the thermal conductivity. In case of doubt, a free trial experiment may be considered. Together with the customer, Hukseflux will **optimise specimen dimensions**. In most cases the customer will supply specimens.

## Terms and conditions

Our General Conditions of Sale are applicable to every offer and all our services. In addition, the following conditions and restrictions apply for testing services:

**Warranty on specimens:** We treat all specimens with care. However, Hukseflux is not responsible or liable for any damage, loss, harm or theft.

**Traceability:** Hukseflux provides measurements traceable to international standards. However, Hukseflux is not a certified measurement laboratory according to ISO / IEC 17025.

**Uncertainty:** The uncertainty of the end result of a measurement may be different from that mentioned in Hukseflux' general literature. Uncertainty evaluation is possible only after the experiment has been carried out. Uncertainties

estimated prior to the test are approximate only and not guaranteed.

**Transport of dangerous goods and fluids:** In case specimens are dangerous or contain fluids, supply is accepted only if the packaging and labelling are according to regulation. Dangerous goods are always returned. Non dangerous fluids may be disposed by Hukseflux after testing. The customer carries the transport costs and is responsible for the arrangement of transport. The supplied packaging must be suitable both for shipment to Hukseflux and for the return shipment.

**Free trial testing:** In some cases, to assess applicability of the proposed measurement methods, Hukseflux may offer to perform a free of charge trial test. The agreement to carry out a free trial test is not a formal contract.

**Required documents:** Orders should be submitted with a completely filled out and signed request form.

## Definitions

Hukseflux uses the following definitions:

**Material:** general description such as plastic, metal, soil, fluid,...

**Material type:** code serving as a specific description to be used for reporting and offering a clear distinction between materials, such as steel C12, Steel 15 Mo3. This may also be user's own codes such as "PU13 RS15"

**Specimen:** one piece or a quantity of material to be used for analysis

**Specimen number:** in case of multiple specimens of one material type, we indicate numbers with the "#" symbol

**Specimen identification:** marking on the specimen to allow individual tracing. Typically we use Material Type – Specimen Number, for example PU13 RS15 #1"

**Container:** bag, bottle or liner containing specimen(s)

CUSTOMER CONTACT FOR MEASUREMENT	
Company name	
Contact person	
Address	
Zip code, City	
Country	
Email	
Telephone	

CUSTOMER CONTACT FOR ORDER AND INVOICE	
<input type="checkbox"/> Same as above	
Contact person	
Address	
Zip code, City	
Country	
Email	
Telephone	

CUSTOMER ADDRESS FOR RETURN SHIPMENT FROM HUKSEFLUX TO CUSTOMER	
<input type="checkbox"/> No return shipment	
Contact person	
Address	
Zip code, City	
Country	
Email	
Telephone	

SHIPMENT INSTRUCTION TO HUKSEFLUX	
Shipment address	<input type="checkbox"/> Hukseflux Thermal Sensors B.V. Thermal properties laboratory Delftechpark 31 , 2628 XJ Delft, The Netherlands
Identification on documents	<input type="checkbox"/> Please clearly indicate the customer name and Hukseflux proforma invoice or confirmation number.
Safety Data Sheets	<input type="checkbox"/> If possible, add a material safety data sheet (MSDS), safety data sheet (SDS) or product safety data sheet (PSDS) to the shipment documents. <input type="checkbox"/> Not applicable
Transport of dangerous goods and transport of specimens containing fluids	In case specimens are dangerous or contain fluids, supply is accepted only if the packaging and labelling are according to regulation. Dangerous goods are always returned. Non dangerous fluids may be disposed by Hukseflux. The customer is responsible for arrangement of transport and to carry the costs for all transport. The supplied packaging must be suitable both for shipment to Hukseflux and for the return shipment. <input type="checkbox"/> Not applicable <input type="checkbox"/> Applicable and agreed
Documents	<input type="checkbox"/> Please use an invoice with the shipment stating: "Samples for testing purposes Value for customs; EUR 50" <input type="checkbox"/> Please mark on the invoice the following HS code: 9801.00.40 "articles exported for the purpose of experimentation"

<b>MATERIAL, SAFETY, STORAGE, DISPOSAL</b>	
Description of the material(s) to be analysed	<input type="checkbox"/> Solid / <input type="checkbox"/> Fluid / <input type="checkbox"/> Suspension (liquid/ solid) <input type="checkbox"/> Porous / <input type="checkbox"/> Non porous; If porous: <input type="checkbox"/> Open cell or <input type="checkbox"/> Closed cell <input type="checkbox"/> Granulate / <input type="checkbox"/> Powder/ <input type="checkbox"/> Soil <input type="checkbox"/> Paste / <input type="checkbox"/> Glue <input type="checkbox"/> Plastic / <input type="checkbox"/> Composite / <input type="checkbox"/> Paint / <input type="checkbox"/> Foil. <input type="checkbox"/> Any fillers: <input type="checkbox"/> Foodstuff <input type="checkbox"/> Cloth / Fabric
Summary of material types to be analysed	
Dangerous goods	<input type="checkbox"/> Specimens contain dangerous goods (if so, continue to table about dangerous goods) <input type="checkbox"/> Specimens do not contain dangerous goods
Any storage or stability issues	<input type="checkbox"/> Stability / <input type="checkbox"/> Aging <input type="checkbox"/> Rot / <input type="checkbox"/> Bacterial / <input type="checkbox"/> Fungal <input type="checkbox"/> Outgassing
Transport and storage conditions	<input type="checkbox"/> Room temperature <input type="checkbox"/> Other:
Disposal	<input type="checkbox"/> The specimens are not dangerous and may be disposed by Hukseflux <input type="checkbox"/> The specimens are not dangerous and do not contain fluids and must be sent back to the customer <input type="checkbox"/> The specimens are dangerous or contain fluids and the customer will arrange pickup at Hukseflux

<b>SUPPLIED MATERIALS AND SPECIMENS</b>	
Description of specimens	
Number of different material types to be analysed	# Material type:
Size of one specimen	(LxWxH) in x 10 <sup>-3</sup> m Thickness tolerance in x 10 <sup>-3</sup> m
Number of specimens per material	#
Specimen identification (note: specimens or container must be marked individually) Hukseflux recommends marking of the specimens with the same code that must appear in the report.	Comment: if possible using the material type and numbered per set starting with #1. For example "PU 13, RS15 #1".
Processing / machining required by Hukseflux	<input type="checkbox"/> Yes <input type="checkbox"/> No
For checking purposes: total number of specimens	#
For checking purposes: The number of specimens have been assessed in cooperation with Hukseflux	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transport container type	<input type="checkbox"/> Box, <input type="checkbox"/> Bottle, <input type="checkbox"/> Other:
Weight and dimensions of package	Kg: (LxWxH) in x 10 <sup>-3</sup> m:

REQUESTED TEST	
Required measurand /measurement quantity to be tested	<input type="checkbox"/> Thermal conductivity <input type="checkbox"/> Thermal resistance <input type="checkbox"/> Contact resistance
Reference of correspondence	<input type="checkbox"/> Proforma Invoice number / <input type="checkbox"/> Email with date & contact person:
Additional measurands	<input type="checkbox"/> Density estimate <input type="checkbox"/> Thickness
Expected order of magnitude of test result Thermal conductivity in W/(m·K) Thermal / contact resistance in K·m <sup>2</sup> /W	
Customer's required uncertainty of the measurement or conformity testing relative to a limit values	<input type="checkbox"/> Required uncertainty in % : <input type="checkbox"/> No required uncertainty <input type="checkbox"/> Conformity testing only. Limit value:
Free of charge trial test (when agreed on)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Last acceptable date for test result	Day/ month/ Year:
For checking purposes: The uncertainty has been assessed in cooperation with Hukseflux	<input type="checkbox"/> Yes <input type="checkbox"/> No
Temperature range in °C	<input type="checkbox"/> Room temperature <input type="checkbox"/> Extended range:                      to
Pressure range in bar	
Approximate density of samples under test in Kg/m <sup>3</sup> . NOTE: Hukseflux can only approximately reproduce densities of granulates	<input type="checkbox"/> Not relevant <input type="checkbox"/> Unknown
Additional specimen properties (only required for small specimens with thermal needles) Estimated heat capacity in J·m <sup>3</sup> /°C	<input type="checkbox"/> Not relevant <input type="checkbox"/> Unknown
For fluids only: viscosity in Pa·s and coefficient of thermal expansion in % / K	

SPECIMENS CLASSIFIED AS DANGEROUS GOODS	
MSDS: Material Safety Data Sheet	For dangerous goods, please specify <input type="checkbox"/> CAS number and percentage: <input type="checkbox"/> Risk: <input type="checkbox"/> Handling instructions:
Personal protection required for handling	<input type="checkbox"/> None <input type="checkbox"/> Nitrile gloves <input type="checkbox"/> Goggles <input type="checkbox"/> Ventilation <input type="checkbox"/> Dust respirator (organical fumes till 1000 ppm or 10 x MAC and dust 10 x MAC, EN 405:2001) <input type="checkbox"/> Other, please specify:

Signed for acceptance of Hukseflux General Conditions of Sale and conditions as mentioned on page 1 of this document,

Company name, name of the person signing, date, legally valid signature