

## Oxidation Characteristics of Light Oils - TOO - FTM 791-5308

DIN 51394 (obs.), FTM 791-5308

**Product group(s):** Oil

**User group(s):** Diesel, Fuel, Light Oil, Lubricating Oil, Mineral Oil, Turbine Oil

**Scope:** FTM 791-5308 - Corrosiveness and Oxidation Stability of Light Oils (Metal Squares)

Use: To measure the ability to resist oxidation and their tendency to corrode various metals of hydraulic oils and similar, highly refined and light oils.



### TOO Test Equipment

to be composed of:

- **Bath** (Dry-Heat or Liquid Bath with 4 or 8 testplaces)
- **Glassware & Accessories**

Note! Some items are not required to the standards DIN 51 394 and FTM 791-5308 but recommended.

### Technical Data

#### Dry-Heat Bath

Temperature range: ambient to +220°C  
Heating capacity: 2000 W  
Opening size: Ø 54 x 400 mm  
Dimensions (WxDxH): 382 x 436 x 580 mm

#### Liquid Bath

Temperature range: ambient to +175°C  
Heating capacity: 2100 W  
Opening size: Ø 51 mm  
Dimensions (WxDxH): 280 x 430 x 650 mm, 35 kg

### Main Unit

**16-0545 Glassware Set DIN 51 394 (obsolete)**  
Consisting of:  
 4x air inlet tube (Ø 8 x 930 mm)  
 4x connection head, for air tube (NS 29/32, 68 mm)  
 4x PTFE sleeve (NS 29/32)  
 4x Alihn condenser (NS 29/32 + NS 45/40, 340 mm)  
 4x PTFE sleeve (NS 45/40)  
 4x oil test tube (NS 45/40, Ø 50 x 500 mm)

**16-0551 Assembly Device for specimen sheets**  
 (DIN 51 394) - FTM 791c-5308

**13-0719 Silicon Carbide Grit Paper, 150 grit (P150), 10 sheets**

**13-0720 Silicon Carbide Grit Paper, 240 grit (P280), 10 sheets**

**16-0550 Metal Test Specimens Set - Code: 401**  
**for Oxidation Stability of Light Oils**  
 FTM 791-5308 - (DIN 51 394)

Material/Composition: Code 401 A - E  
 Dimension: 1" x 1" x 0.03" with 2 holes  
 Pack/Set: 1 each

40-4010

**Metal Test Specimens - Code: 401 A  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)



Material/Composition: Copper  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10

40-4011

**Metal Test Specimens - Code: 401 B  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Steel 10  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10

40-4012

**Metal Test Specimens - Code: 401 C  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Aluminum  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10

40-4013

**Metal Test Specimens - Code: 401 D  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Magnesium  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10

40-4014

**Metal Test Specimens - Code: 401 E  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Cadmium, pure  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10

40-4002

**Metal Test Specimens Set - Code: 401  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Code 401 A - E  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 10 each

40-4003

**Metal Test Specimens Set - Code: 401  
for Oxidation Stability of Light Oils**  
FTM 791-5308 - (DIN 51 394)

Material/Composition: Code 401 A - E  
Dimension: 1" x 1" x 0.03" with 2 holes  
Pack/Set: 50 each

16-1418

**Dry Heat Bath & Flow Meter Set (4-place & <6 l/h)**  
FTM 791-5308 (DIN 51 394)



Consisting of:

stainless steel constant-temperature bath for tests up to 230°C,  
aluminum block with 4 wells (Ø54x400 mm) for the glassware,  
4 lids, bath-thermometer ASTM 40C / IP 80C, spirit level,  
4 flow meters (0.4 ... 6 l/h), silicon hose (4 m).

Power supply: 230 V, 50/60 Hz

**16-1417 Dry Heat Bath & Flow Meter Set (4-place & <6 l/h)**

Like 16-1416 but:  
Power supply: 115 V, 50/60 Hz

**16-0583 Liquid Bath & Flow Meter Set (4-place & <6 l/h)**

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO4263 - ISO 12 205 / IP 388 - DIN 51 587 - FTM 791-5308 (DIN 51 394)



Consisting of:  
stainless steel constant temperature bath (33 l) for tests up to 175°C  
with 4 openings (Ø51 mm) for the glassware, 4 lids,  
bath-thermometer ASTM 40C / IP 80C, thermometer support, spirit level,  
4 flow meters (0.4 ... 6 l/h), silicon hose (4 m).

Power supply: 230 V, 50/60 Hz

**16-0584 Liquid Bath & Flow Meter Set (4-place & <6 l/h)**

Like 16-0583 but:  
Power supply: 115 V, 50/60 Hz

**16-0581 Liquid Bath & Flow Meter Set (8-place & <6 l/h)**

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO4263 - ISO 12 205 / IP 388 - DIN 51 587 - FTM 791-5308 (DIN 51 394)

Consisting of:  
stainless steel constant temperature bath for tests up to 175°C  
with 8 openings (Ø51 mm) for the glassware, 8 lids  
bath-thermometer ASTM 40C / IP 80C, thermometer support, spirit level,  
8 flow meters (0.4 ... 6 l/h), silicon hose (4 m).

Power supply: 230 V, 50/60 Hz

**16-0458 Liquid Bath & Flow Meter Set (8-place & <6 l/h)**

Like 16-0581 but:  
Power supply: 115 V, 50/60 Hz

**Options & Accessories**

**16-0450 Holder for 8 oil test tubes**

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO4263 - ISO 12 205 / IP 388 - DIN 51 587 - FTM 791-5308 (DIN 51 394)

**16-0720 Drain Cock for thermostatic baths (G¼")**

**25-0515 Cooling Coil**

**12-1667 Digital-Thermometer for temperature probes (Pt-100)**



Application: liquids, soft media, air / gases  
Min./Max. value memory: Memorizing of max. and min. values  
Hold function: a button to stop the display for easy storing, while the normal display keeps running  
Auto-Off-Function: 1...120 min (can also be deactivated)  
Offset and slope input: offset- and scale correction can be entered digitally  
Measuring Range: depending on the connected temperature probe  
possible: -199.99 to +199.99°C (-199.99 to +199.99°F), resolution: 0.01°  
-200.0 to +850.0°C (-328.0 to +1562.0°F), resolution: 0.1°  
Temperature probe: not included  
(suitable for all Pt-100 4-wire probes with 4-pin miniature DIN-plug)  
Dimensions: 142 x 71 x 26 mm (H x W x D), Weight: approx. 155 g  
Power supply: 9V-battery (included) & D.C. connector for external 10.5-12V direct voltage supply

Available Pt-100: 12-1666 (TOO/TOST), 12-1668 (PM 4)

12-1666	<b>Temperature Probe Pt-100 (metal) (Ø 6 x 600 mm)</b> Measuring range: -50 to +400 °C Suitable for: bath temperature of TOO/TOST-liquid bath
11-0091	<b>Thermometer ASTM 40C / IP 80C</b> Range: +72 to +126 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0092	<b>Thermometer ASTM 40C / IP 80C</b> Range: +72 to +126 : 0.2 °C (officially certified)
11-0093	<b>Thermometer ASTM 41C / IP 81C</b> Range: +98 to +152 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0094	<b>Thermometer ASTM 41C / IP 81C</b> Range: +98 to +152 : 0.2 °C (officially certified)
11-0247	<b>Thermometer ASTM 102C / IP 83C</b> Range: +123 to +177 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0248	<b>Thermometer ASTM 102C / IP 83C</b> Range: +123 to +177 : 0.2 °C (officially certified)
11-0249	<b>Thermometer ASTM 103C / IP 84C</b> Range: +148 to +202 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0250	<b>Thermometer ASTM 103C / IP 84C</b> Range: +148 to +202 : 0.2 °C (officially certified)
<b>Spare Parts</b>	
16-0546	<b>Air Inlet Tube (Ø 8 x 930 mm)</b> DIN 51 394 - FTM 791c-5308
16-0547	<b>Connection Head , 68 mm</b> DIN 51 394 - FTM 791c-5308
16-0548	<b>Allihn-Typ Condenser , 340 mm</b> DIN 51 394 - FTM 791c-5308
16-0549	<b>Oil Test Tube (Ø 50 x 500 mm)</b> DIN 51 394 - FTM 791c-5308
50-7027	<b>Sleeve (NS 29/32) with Grip Ring, PTFE</b> chem. resistant, gas- & liquid safe, vacuum tight (leak rate: <0.004 mbar, material thickness: 0.4 mm) for multiple use at -200 to +260 °C <u>Note:</u> not recommendable if taper clips are used.
50-7030	<b>Sleeve (NS 45/40), PTFE, reusable</b> improves the gas, liquid and vacuum tightness; prevents the air-inlet from jamming
25-0602	<b>Heating Element DP, 2000 W, 230 V</b>
25-0603	<b>Heating Element DP, 1000 W, 115 V</b>
13-0039	<b>Heating Element, Power supply: 230 V (for dry heat bath)</b>
13-0032	<b>Heating Element, Power supply: 115 V (for dry heat bath)</b>
16-0568	<b>Flow Meter-Unit, 0.4 ... 6 l/h</b>



Consisting of:

4-place bench, calibrated with needle valve, air and cooling water supply system with inlet and outlet nozzles, heavy stand, works certificate with setting values calibrated

**Order Guideline**

Minimum equipment:

For 4-place: 1x Bath (Liquid or Dry Heat),  
1xAccessories (see main unit)

For 8-place: 1x Bath (Liquid),  
2xAccessories (see main unit)

Spares (approx. 1 year):

see Spare Parts  
4x (8x) Glassware, 1x Heating Element,  
Specimens (as necessary)

Additional requirements:

Gas Supply