

Oxidation Characteristics of Steam Turbine Oils - TOST - ASTM D 943

ASTM D 943, JIS K2514, BS 4388 (obs.)

Product group(s): Oil

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

Scope: ASTM D 943 - Oxidation Characteristics of Inhibited Mineral Oils having a specific gravity less than that of water and containing rust and oxidation inhibitors.

Use: For specification purposes and estimating the oxidation stability of lubricants, especially those that are prone to water contamination, like inhibited steam-turbine oils, hydraulic oils and circulating oils in the presence of oxygen, water, and copper and iron metals.



TOST Test Equipment

to be composed of:

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

Note! Some accessories are not required to the standards ASTM D 943, BS 4388 and JIS K2514 but recommended.

Technical Data

Dry-Heat Bath

Temperature range: ambient to +220°C
Heating capacity: 2000 W
Opening size: Ø 50 x 400 mm (for glassware with Ø 44 to 48 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

16-0586

Oxidation Cell Set

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO 4263 pt.1-3 - ISO 12 205 / IP 388 - DIN 51 587

Consisting of:

- 4x oil test tube (46 x 600 mm)
- 4x oxygen inlet tube (7 x 750 mm)
- 4x fungus condenser



16-0572

Thermometer Holder

16-0573

Thermometer for Test Cell

Range: +80 to +100 : 0.1 °C

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-3 - optional for DIN 51 587

16-0574

Sampling Capillary, stainless steel, length 559 mm (Ø 1.6 / 2.11 mm)

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-3 - optional for DIN 51 587

16-0557

Sampling Capillary Holder

ASTM D 943 / JIS K2514 (BS 4388) - ISO 4263 pt.1-3 - optional for ASTM D 4310 / IP 157 / JIS C2101 - DIN 51 587

16-0558	Sampling Capillary Spacer, pack of 10 ASTM D 943 / JIS K2514 (BS 4388) - ISO 4263 pt.1-3 - optional for ASTM D 4310 / IP 157 / JIS C2101 - DIN 51 587
16-0592	Stopper, Silicone (6.5/15), pack of 5
16-0575	Syringe, 10 ml volume with 0.2 graduation, made of glass, for IP 263 ASTM D 943 / JIS K2514 (BS 4388) - ISO 4263 pt.1-3 - optional for ASTM D 4310 / IP 157 / JIS C2101 - DIN 51 587
16-0576	Syringe, 50 ml volume with 2.0 graduation, made of glass, for IP 263
16-0596	Metal Test Specimens for Turbine Oil Oxidation (TOST) ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-4 - DIN 51 587 Material/Composition: Steel wire Dimension: Ø 1.6 mm Pack/Set: 5 kg
16-0597	Metal Test Specimens for Turbine Oil Oxidation ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-4 - DIN 51 587 Material/Composition: Copper wire (E- Cu F 20) Dimension: Ø1.6 mm ; ring Pack/Set: 5 kg
16-0598	Wire Coiling Mandrel ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-4 - DIN 51 587
50-4025	Abrasive Cloth, 100-grit, pack of 10 ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-4 - DIN 51 587
11-0091	Thermometer ASTM 40C / IP 80C Range: +72 to +126 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0092	Thermometer ASTM 40C / IP 80C Range: +72 to +126 : 0.2 °C (officially certified)
16-1416	Dry Heat Bath & Flow Meter Set (4-place & <6 l/h) ISO 4263 - ISO 12 205 / IP 388 - ASTM D 7462 optional: ASTM D 943 / JIS K2514 - ASTM D 4310 / IP 157 / JIS C2101 - DIN 51 587 <u>Consisting of:</u> stainless steel constant-temperature bath for tests up to 230°C, aluminum block with 4 wells (Ø50x400 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). Note! ASTM D 4310 and DIN 51 587 do not specify, but glassware fits well and many users appreciate the advantages of this technology. 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

40-4090

Metal Test Specimens - Code: 409 Y for Turbine Oil Oxidation

ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 4310 / IP 157 / JIS C2101 - ISO 4263 pt.1-4 - DIN 51 587

Material/Composition: Steel + copper wire coiled together

Dimension: ready for use cut & packed in storage tubes

Pack/Set: 12

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 (G³/₄")

25-0515

Cooling Coil

11-0093

Thermometer ASTM 41C / IP 81C

Range: +98 to +152 : 0.2 °C

Length: 395 mm, Immersion: 100 mm, Ø 7 mm

11-0094

Thermometer ASTM 41C / IP 81C

Range: +98 to +152 : 0.2 °C (officially certified)

11-0247

Thermometer ASTM 102C / IP 83C

Range: +123 to +177 : 0.2 °C

Length: 395 mm, Immersion: 100 mm, Ø 7 mm

11-0248	Thermometer ASTM 102C / IP 83C Range: +123 to +177 : 0.2 °C (officially certified)
11-0249	Thermometer ASTM 103C / IP 84C Range: +148 to +202 : 0.2 °C Length: 395 mm, Immersion: 100 mm, Ø 7 mm
11-0250	Thermometer ASTM 103C / IP 84C Range: +148 to +202 : 0.2 °C (officially certified)

Spare Parts

16-0589	Oxygen Inlet Tube (Ø 7 x 750 mm) ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO 4263 pt.1-3 - ISO 12 205 / IP 388 - DIN 51 587
16-0588	Condenser, Fungus-Type ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO 4263 pt.1-3 - ISO 12 205 / IP 388 - DIN 51 587
16-0590	Test Tube (Ø 46 x 600 mm), round bottom ASTM D 943 / JIS K2514 (BS 4388) - ASTM D 2274 - ASTM D 4310 / IP 157 / JIS C2101 - ASTM D 7462 - ISO 4263 pt.1-3 - ISO 12 205 / IP 388 - DIN 51 587
25-0602	Heating Element DP, 2000 W, 230 V
25-0603	Heating Element DP, 1000 W, 115 V
13-0039	Heating Element, Power supply: 230 V (for dry heat bath)
13-0032	Heating Element, Power supply: 115 V (for dry heat bath)
16-0568	Flow Meter-Unit, 0.4 ... 6 l/h



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), 1x Accessories (see main unit) For 8-place: 1x Bath (Liquid), 2x Accessories (see main unit)
Spares (approx. 1 year):	see Spare Parts 4x (8x) Glassware, 1x Heating Element, Specimens (as necessary)
Additional requirements:	Gas Supply