

Annex to declaration of accreditation (scope of accreditation)
Normative document: EN ISO/IEC 17025:2017
Registration number: **L 063**

of **Element Materials Technology Rotterdam. B.V.**
Laboratory

This annex is valid from: **20-06-2024** to **01-09-2028**

Replaces annex dated: **23-08-2023**

Location(s) where activities are performed under accreditation

Head Office

Voorerf 18
4824 GN
Breda
The Netherlands

| Location | Abbreviation/ location code |
|--------------------------------------------------------------|------------------------------------|
| Voorerf 18 4824 GN Breda The Netherlands | BR |
| Schutterstraat 27B 6191 RZ Beek The Netherlands | BE |
| Zekeringstraat 33 1014 BV Amsterdam The Netherlands | AM |
| Kapitein Nemostraat 12 7821 AC Emmen Nederland | EM |
| On-site | OS |

This annex has been approved by the Board of the
Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas

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|------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Sample preparation and sample selection | | | | |
| a. | Metals, metal alloys and weld connections | Aging Sensitivity Unalloyed Carbon steel | SOP 10-20 DIN 17102 par.7.4.1.5, EN 10225 | BR |
| b. | | Destructive testing of qualifying welds for weldmethod-qualification and welder-qualification | SOP 10-40 AD Merkblatt HP2/1, AD Merkblatt 5/3, 5/2, BS 4515, Vd TÜV 1158, TRD 201, Stoomwezen regels T0112, -T0101, -T0120, -T0205, -T0210, -T0215, ASME VIII, ASME IX, API 1104, API 1107, AWS D1.1, AWS D1.2, AWS D1.6, AWS D1.9, Lloyd's Reg. Rules, DNV-rules for M.O.U., EN 287, ISO 15614 (serie), ISO 9606 (serie), EN 13445, EN 12732, ASME B31.1, ASME B31.3, NEN 3650 | BR, BE, AM, EM |
| c. | | Microstructure on location: microscopic and / or electron microscope research on replica's (magnification up to 1000x) | SOP 30-04 In-house method | BR, BE, AM, EM, OS |
| d. | | Heat treatment Temperature up to 1373K | SOP 50-04 In-house method | EM |
| e. | Coating | Immersion (water) | SOP 93-02 ISO 2812-2, ISO 12944-6, ISO 12944-9, ISO 20340, ISO 21809-2, ISO 21809-3, NACE SP0394, NACE TM0104, NACE TM0204, NACE TM0304, NACE TM0404, NORSOK M-501 | AM |
| f. | | Flexibility | SOP 93-03 ISO 1519, ISO 21809-1, ISO 21809-2, NACE SP0394, NACE TM0104, NACE TM0204, NACE TM0304, NACE TM0404 | AM |
| g. | | Porosity | SOP 93-04 ISO 21809-2, NACE SP0394 | AM |
| h. | | Interface Contamination | SOP 93-05 ISO 21809-2, NACE SP0394 | AM |

¹ If there is a referral to a code starting with NAW, NAP, EA or IAF, this concerns a scheme mentioned on the [RvA-BR010-lijst](#).
 If no date or version number is mentioned for a normative document, the accreditation concerns the most current version of the document or scheme.

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| i. | Coating | Impact | SOP 93-07 ASTM D2794, ASTM G14, EN 12068, ISO 6272-1, ISO 6272-2, ISO 21809-1, ISO 21809-2, ISO 21809-3, NACE SP0394, NACE TM0304, NACE TM0404 | AM |
| j. | | Adhesion testing of Coatings | SOP 93-08 ASTM D3359, ASTM D4541, ASTM D5179, EN 12068, ISO 2409, ISO 4624, ISO 6272-1, ISO 12944-6, ISO 12944-9, NORSOK M-501, ISO 21809-1, ISO 21809-2, ISO 21809-3 | AM |
| k. | | Thermal Aging / Cycling | SOP 93-09 NACE TM0304, NACE TM0404, EN 12068, ISO 12944-6, ISO 12944-9, ISO 21809-1, ISO 21809-3, NORSOK M-501 | AM |
| l. | | UV/ Condensation Exposure | SOP 93-12 ASTM D4587, ASTM D5894, ISO 11507, ISO 12944-6, ISO 12944-9, ISO 16474-1, ISO 16474-3, ISO 20340, NACE TM0404, NACE TM0304, NORSOK M-501 | AM |
| m. | | Condensation (Humidity) | SOP 93-17 ASTM D4585, ISO 6270-1, ISO 6270-2, ISO 12944-6, ISO 12944-9, NORSOK M-501, EN 12068, ISO 21809-1, ISO 21809-3 | AM |

Mechanical testing

| | | | | |
|---|-------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 1 | Metals, metal alloys and weld connections | Tensile Test at ambient temperature 283 K – 308 K | SOP 10-01 EN 10002 1:2001, ASTM A370, ASTM E8, ASTM B 557, ISO 6892-1, ISO 9018, ISO 4136, EN 895:1995, EN 2002-001, ISO 22674, ISO TR 6892-5 | BR, BE, AM, EM |
| 2 | | Tensile Test at elevated temperature 293 K – 1173 K | SOP 10-02 EN 10002-5:1992, ASTM E21, ISO 6892-2, ISO 783:1999 | BR, AM |
| 3 | | Impact Test at temperatures between 76 K – 493 K | SOP 10-03 NEN-EN 10045-1:1990, ISO 148-1, ISO 9016, ASTM A370, ASTM E23, EN 875:1995 | BR, BE, AM, EM |

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| 4 | Metals, metal alloys and weld connections | Bending Test | SOP 10-04 NEN 3650, ISO 7438, ISO 5173, ISO 9017, ISO 9606, ISO 15614, ISO 5177, ASTM A370, ASTM A615, ASTM E190, ASTM E290, ASME IX, AWS D1.1, AWS D1.2, AWS D1.6, AWS D1.9, EN 287, EN 910, EN 12732, EN 13445 | BR, BE, AM, EM |
| 5 | | Flattening Test | SOP 10-10 ISO 8492, ASTM A370, ASTM A530 | BR, AM, EM |
| 6 | | Drift Expanding Test | SOP 10-11 ISO 8493, ASTM A370, ASTM A450 | BR, AM |
| 7 | | Ring Expanding Test | SOP 10-12 ISO 8495 | BR, AM, EM |
| 8 | | Ring Tensile Test | SOP 10-13 ISO 8496 | BR, AM |
| 9 | | Shear Test | SOP 10-15 DIN 50162, DIN 50141, ISO 9018, ASME IX, ASTM A263/264, ASTM A265 | BR, AM |
| 10 | Cladded material | Shear Test | SOP 10-16 DIN 50162, AD 2000-Merkblatt W8, ASTM A 264 | AM |
| 11 | Metals, metal alloys and weld connections | Single Edge Notched Bend (SENB) specimens | SOP 10-18 BS 7448 part 1-4, ASTM E1290, ASTM E1820, ASTM E399, ISO 12135, ISO 15653, API 1104, DNV-OS-F110 | BR, EM |
| 12 | | Single Edge Notched Tensile (SENT) specimens | SOP 10-19 ISO 15653, BS 7448 part 1-4, BS 8571, DNV-OS-F101, DNV-RP-F108 | BR |
| 13 | | Pellini Drop Weight Test | SOP 10-21 ASTM E208 | EM |
| 14 | | Drop weight shear test Energy up to 20kJ | SOP 10-23 API RP 5L3, ASTM E436, EN10274 | EM |
| 15 | | Hardness Test; Brinell | SOP 10-30 ISO 6506-1, ASTM A370, ASTM E10 | BR, BE, AM, EM |

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| 16 | Metals, metal alloys and weld connections | Hardness Test; Vickers Load between 49 N – 294 N | SOP 10-31 ISO 6507-1, ISO 9015, ASTM E92 | BR, BE, AM, EM, OS |
| 17 | | Hardness Test; Rockwell | SOP 10-32 ISO 6508-1, ASTM A370, ASTM E18, NASM1312-6 | BR, BE, AM, EM |
| 18 | | Hardness measurement on location with portable devices | SOP 10-33 In-house method | BR, BE, EM, OS |
| 19 | | Micro Hardness measurement: Knoop, Vickers, load (0,049 – 29,4) N | SOP 10-34 ISO 6507-1, ISO 9015, ISO 4545, ISO 4516, ASTM E384 | BR, BE, AM, EM |
| 20 | | Break Test on welds | SOP 10-42 API 1104, API 1107, ASME VIII, ASME IX, ISO 9606, AD Merkblatt HP3, EN 287, EN 13445 | BR, BE, AM, EM |
| 21 | | Fillet weld break Test | SOP 10-43 ASME VIII, ASME IX, API 1104, AWS D1.1, AWS D1.2, AWS D1.6, AWS D1.9, EN 287-1, Vd TÜV 1158, ISO 9606 | BR, BE, AM, OS, EM |
| 22 | | Clad welding Bend Test | SOP 10-44 DIN 17100 par.9.5.7, SEP 1390 | BR, BE |
| 23 | Reinforced steel bars | Tensile testing | SOP 10-52 NEN-6008, BRL 0503, ISO 15835-1 en ISO 15835- 2, ISO 15630-1, EN 10080 | AM, EM |
| 24 | | Shear testing | SOP 10-53 NEN-6008, BRL 0503 | EM |
| 25 | | Shear stress measurements of welds | SOP 10-54 NPR-2053, BRL 0512, ISO 17660-1, ISO 17660-2, ISO 15630-1, ISO 15630-2 | EM |
| 26 | | Fatigue testing | SOP 10-55 and SOP 10-57 EN 10080, NEN 6008, BRL 0504 en BRL 0501, ISO 15630-1 | AM |
| 27 | | Dimensional inspection | SOP 10-56 NEN-6008, ISO 15630-1, EN 10080, BRL 0503 en ISO 15630-2 | EM |

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|-----|---------------------|-------------------------------|------------------------------|----------|
| 28 | Hoisting hook | Load Test | SOP 10-80 In-house method | AM |

Chemical analysis

| | | | | |
|----|-------------------------------------------|---------------------------------------------------------------------------|------------------------------|--------------------------|
| 29 | Metals, metal alloys and weld connections | Semi-quantitative material analysis; X-ray fluorescence measurement (PMI) | SOP 20-01 ASTM E 1476 | BR, BE, AM, EM, OS |
| 30 | | Chemical Composition; Optical Emission Spectrometry | SOP 20-02 In-house method | BR, AM, EM, OS |

Metallography

| | | | | |
|----|-------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------|
| 31 | Metals, metal alloys and weld connections | Ferrite Measurement: Inductive method | SOP 30-01 In-house method | BR, BE, AM, EM, OS |
| 32 | | Ferrite Measurement: Manual Point Count | SOP 30-02 ASTM E562 | BR, BE, AM, EM |
| 33 | | Grain size determination | SOP 30-03 ISO 643, ASTM E112, AFNOR NFA 04-102 | BR, BE, AM, EM |
| 34 | | Microstructures analysis (magnification up to 1000x) | SOP 30-05 ASTM E 3, 45, 112, 247, 381, 384, 562, 883, 930, 1077, SAE J422, ISO 26146 | BR, BE, AM, EM |
| 35 | | Fracture analysis | SOP 30-07 In-house method | BR, BE, AM, EM, OS |
| 36 | | Creep analysis by microstructure | SOP 30-08 Stoomwezen Regels T0102, -T0204, Vd TüV Merkblatt 451, ASTM E 1351, ISO 3057, VGB-TW507, VGB-S517 | BR, BE, AM, OS, EM |
| 37 | | Degree of purity Non-metallic inclusions | SOP 30-22 DIN 50602, ASTM E45 | BR, BE, EM |
| 38 | | Ferrite measurement: Magne-Gage | SOP 30-30 In-house method | BR, AM, EM |
| 39 | Metals, metal alloys, weld | Scanning Electron Microscopy (SEM) | SOP 30-40 In-house method | BR, BE, AM, EM |

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| 40 | connections and corrosion products | Energy Dispersive X-Ray Analysis (EDX) | SOP 30-40 In-house method | BR, BE, AM, EM |

Corrosion testing

| | | | | |
|----|-------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------|
| 41 | Metals, metal alloys and weld connections | Salt Spray Test (mass up to 250 kg; size approximately 1.75 m x 1 m) | SOP 40-01 ASTM B117, ASTM B 368, ASTM G 85, DIN 50021, ISO 10289, ISO 9227, NEN 10068, ISO 12944-9 | BR, AM |
| 42 | | Inter-granular Corrosion Test Strauss-Test | SOP 40-10 ASTM A262 practice E, ISO 3651-2, DIN 50914 | BR, BE, AM, EM |
| 43 | | Inter-granular Corrosion Test Streicher-Test | SOP 40-11 ASTM A262 practice B, ASTM G28 | BR, BE, AM, EM |
| 44 | | Inter-granular Corrosion Test Huey-Test | SOP 40-12 ASTM A262 practice C, ISO 3651-1 | BR, BE, AM, EM |
| 45 | | Inter-granular Corrosion Test Oxalic acid Test | SOP 40-13 ASTM A262 practice A | BR, BE, AM, EM |
| 46 | | Pitting-corrosion Test | SOP 40-14 ASTM G48, ASTM G46, ASTM A923 | BR, BE, AM, EM |
| 47 | | Bolted CT Environmental Fracture Mechanics Testing | SOP 41-01 ASTM E1681 | BR |
| 48 | Metals | Hydrogen Induced Cracking Test | SOP 40-20 NACE TM-0284 | AM |
| 49 | | Sulfide induced Stress Corrosion Test | SOP 40-21 NACE TM-0177 | AM |

Physical properties

| | | | | |
|----|-------------------------------------------|-----------------------------------------------|------------------------------|------------|
| 50 | Metals, metal alloys and weld connections | Surface roughness (Ra, Rz value) | SOP 50-01 NEN 3635 | BR, OS |
| 51 | | Coating thickness measurement: microscopic | SOP 50-02 ISO 1463 | BR, BE, EM |
| 52 | | Image analysis | SOP 50-03 In house method | AM, EM |

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| Visual Testing | | | | |
| 53 | Metals, metal alloys and weld connections | Visual inspection of welds including macro-structure and weld geometry | SOP 60-01 AD Merkblatt HP2/1, AD Merkblatt 5/3 en 5/2, TRD 201, ASME VIII, ASME IX, AWS D1.1, AWS D1.2, AWS D1.6, AWS D1.9, API 1104, API 1107, BS4515, ASME B31.1, ASME B31.3, EN 287, EN 970, EN 1321, EN13445, EN 12732, BS 4515, NEN 3650, Vd TÜV 1158, ISO 9606 (series), ISO 5817, ISO 15614 (series), ISO6520-1, ISO 6520-2, ISO 10042, ISO 12932, ISO 13919-1, ISO 13919-2, ISO 17637, ISO 17639 | BR, BE, AM, EM, OS |
| Polymer testing | | | | |
| 54 | Mammary Implants | Determination of fatigue resistance: Fatigue test | SOP 96-01 ISO 14607 section 7.2.2.2.1 | AM |
| 55 | | Determination of impact resistance: Impact test | SOP 96-02 ISO 14607 section 7.2.2.2.2 | AM |
| 56 | | Determination of shell integrity: Tensile test | SOP 96-03 ISO 14607 section 7.2.2.1 | AM |
| 57 | | Determination of silicone gel cohesion: Viscosity determination | SOP 96-04 ISO 14607 section 7.2.3.3.2 | AM |
| Coating testing | | | | |
| 58 | Coating | Salt Spray | SOP 40-01 ASTM B117, ASTM B368, ASTM D5894, ASTM G85, DIN 50021, ISO 9227, ISO 10289, ISO 12944-6, ISO 20340, NEN 10068-2-52, NORSOK M-501 | AM |
| 59 | | Cathodic Disbondment | SOP 93-01 ASTM G8, ASTM G42, ASTM G95, CSA Z245.20, CSA Z245.21, ISO 12944-6, ISO 12944-9, ISO 15711, ISO 20340, ISO 21809-1, ISO 21809-2, ISO 21809-3, NACE SP0394, NACE TM0104, NACE TM0204, NACE TM0304, NACE TM0404, NORSOK M-501, EN 12068 | AM |
| 60 | | Indentation test | SOP 93-06 EN 12068, ISO 21809-1, ISO 21809-3 | AM |

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| 61 | | Holiday detection | SOP 93-10 ISO 21809-1, ISO 21809-3 | AM |
| 62 | | Coating Film Thickness | SOP 93-11 ASTM D7091, ISO 2808, ISO 19840 | AM |
| 63 | | Evaluation of Coating Defects | SOP 93-21 ASTM D610, ASTM D714, ASTM D5894, ISO 4628-2, ISO 4628-3, ISO 4628-4, ISO 4628-5, ISO 4628-6, ISO 12944- 6, ISO 12944-9, ISO 20340, NACE TM0104, NACE TM0204, NACE TM0304, NACE TM0404, NORSOK M-501, EN 12068, ISO 21809-1, ISO 21809-2, ISO 21809-3 | AM |
| 64 | | Differential Scanning Calorimetry | SOP 93-26 ASTM D3418, ISO 11357 (parts-1-7), ISO 21809-1, ISO 21809-2, ISO 21809-3 | AM |

Opinions & Interpretations

| | | | | |
|----|-------------------------------------------|---------------------------------------------------------|------------------------------|--------------------------|
| 65 | Metals, metal alloys and weld connections | Failure analysis, using the tests as given in this list | SOP 30-06 In-house method | BR, BE, AM, EM, OS |
|----|-------------------------------------------|---------------------------------------------------------|------------------------------|--------------------------|