

**Quality and Accreditation Institute  
Centre for International Accreditation**



Change Adapt Improve

**Guidance for Classification of Product Groups in  
Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 1/91</b>

## CHANGE HISTORY

Sl. No.	Doc No.	Current Issue No.	Revised Issue No.	Date of Issue	Reasons
1	QAI CIA 033	01	02	November 2023 (7 November 2023)	<ul style="list-style-type: none"> <li>• Centre for Laboratory Accreditation (CLA) changed to Centre for International Accreditation (CIA)</li> <li>• Office Address changed from A-34, Sector 48, Noida to 709, Wave Silver Tower, Sector-18, Noida</li> </ul>

## CONTENTS

S.No.	Title	Page No.
	<b>TESTING</b>	
<b>1.1.</b>	<b>BIOLOGICAL DISCIPLINE</b>	10
1.1.1.	Animal Food & Feed	10
1.1.2.	Antimicrobial activity Products	10
1.1.3.	AYUSH Products	10
1.1.4.	Biocides	11
1.1.5.	Biological Monitoring	11
1.1.6.	Biological Tests on Other Miscellaneous Test Items	11
1.1.7.	Biologically Derived Pharmaceuticals	12
1.1.8.	Biopesticides and Biofertilizers	12
1.1.9.	Cell Culture	12
1.1.10.	Cosmetics & Essential Oil	12
1.1.11.	Drugs and Pharmaceuticals	12
1.1.12.	Pollution & Environment	13
1.1.13.	Food and Agricultural Products	13
1.1.14.	Plants	14
1.1.15.	GM Products	14
1.1.16.	Industrial Cultures	15
1.1.17.	Marine /Aqua culture Food Products	15
1.1.18.	Medical Accessories & Surgical products	15
1.1.19.	Molecular Analysis (Tests for Various Matrices-Human, Plants, Animal, Microbial)	15
1.1.20.	Nutraceuticals & Functional Foods	16
1.1.21.	Nutritional Supplements	16
1.1.22.	Plants and Plant Materials	16
1.1.23.	Residue Analysis	16
1.1.24.	Resistance to Microbial Attack	16
1.1.25.	Seed Testing	17
1.1.26.	Toxicology	17
1.1.27.	Veterinary Testing	17
1.1.28.	Water	18
1.1.29.	Wild Life Forensic	18
1.1.30.	Miscellaneous	18
<b>1.2</b>	<b>CHEMICAL DISCIPLINE</b>	19
1.2.1.	Adhesives	19
1.2.2.	Animal Food & Feeds	19
1.2.3.	Atmospheric Pollution	19
1.2.4.	AYUSH Products	20

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 3/91**

S.No.	Title	Page No.
1.2.5.	Building Material	20
1.2.6.	Corrosion tests	20
1.2.7.	Cosmetics & Essential Oils	21
1.2.8.	Drugs & Pharmaceuticals	21
1.2.9.	Explosives & Pyrotechnics	21
1.2.10.	Fertilizers	22
1.2.11.	Fire Fighting Equipment's & Accessories	22
1.2.12.	Food & Agricultural products	22
1.2.13.	Plants	23
1.2.14.	Gases	23
1.2.15.	Glass	23
1.2.16.	Hazardous & Restricted Chemicals	24
1.2.17.	Industrial & Fine Chemicals	24
1.2.18.	Inks, dyes & pigments	25
1.2.19.	Lac & Lac products	25
1.2.20.	Leather	25
1.2.21.	Lubricants	25
1.2.22.	Marine /Aqua culture Food Products	26
1.2.23.	Metallic coatings & treatment solutions	26
1.2.24.	Metals & Alloys	26
1.2.25.	Nutraceuticals & Functional Foods	27
1.2.26.	Nutritional Supplements	27
1.2.27.	Ores & Minerals	27
1.2.28.	Paints & Surface Coating	28
1.2.29.	Paper and Pulp	29
1.2.30.	Pesticide Formulations	29
1.2.31.	Petroleum and Products	30
1.2.32.	Plastic & Resins	30
1.2.33.	Pollution & Environment	31
1.2.34.	Residues and contaminants in Food and Agricultural Products	31
1.2.35.	Residues and contaminants in Water	31
1.2.36.	Rubber & Rubber Products	32
1.2.37.	Soap detergent & Toiletries	32
1.2.38.	Soil and Rock	32
1.2.39.	Solid Fuels	32
1.2.40.	Textile	33
1.2.41.	Warfare Chemicals	33
1.2.42.	Water	34
1.2.43.	Bio-stimulant	34
1.2.44.	Miscellaneous	34

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 4/91**

S.No.	Title	Page No.
<b>1.3</b>	<b>DIAGNOSTIC RADIOLOGY QA TESTING DISCIPLINE</b>	<b>35</b>
1.3.1.	Radiography (X-ray -Fixed Portable, Mobile)	35
1.3.2.	Computed Tomography (CT)	35
1.3.3.	Mammography	35
1.3.4.	Interventional Radiology & Fluoroscopy	35
<b>1.4</b>	<b>ELECTRICAL DISCIPLINE</b>	<b>36</b>
1.4.1.	Bridges & Potentiometers	36
1.4.2.	Cables and Wires	36
1.4.3.	Capacitors	36
1.4.4.	Cells and Batteries	36
1.4.5.	Conductors and Conducting Materials	37
1.4.6.	Domestic Electrical Appliances	37
1.4.7.	Electrical Indicating & Recording Instruments	38
1.4.8.	EMI / EMC Test Facility	38
1.4.9.	Environmental Test Facility	38
1.4.10.	Frequency & Time Measuring Instruments	39
1.4.11.	High Voltage Test Facility	39
1.4.12.	Inductors and Transformers	40
1.4.13.	Insulating Materials & Insulators	40
1.4.14.	Lamps, Luminaires and accessories	41
1.4.15.	Magnetic Materials	41
1.4.16.	Miscellaneous	41
1.4.17.	Power System and Stabilizers	41
1.4.18.	Resistors, resistance boxes & potential dividers	42
1.4.19.	Rotating Electrical Machines	42
1.4.20.	Safety Testing Facility	42
1.4.21.	Short-Circuit Test Facility	42
1.4.22.	Switchgear & Protective Equipment	42
1.4.23.	Transmission Line Equipment and Accessories	43
1.4.24.	Wiring accessories	43
1.4.25.	Energy Efficiency of Domestic Electrical Appliances	44
1.4.26.	Energy Efficiency of Commercial / Industrial Appliances	44
<b>1.5</b>	<b>ELECTRONICS DISCIPLINE</b>	<b>45</b>
1.5.1.	Audio Equipment	45
1.5.2.	Domestic Electronic Appliances & Accessories	45
1.5.3.	Electronic Components & Equipment Sub-Assemblies	45
1.5.4.	EMC Test Facility	46
1.5.5.	Environmental Test Facility	47
1.5.6.	Equipment Used in Clinical Laboratory	48
1.5.7.	IT Equipment	48

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 5/91**

S.No.	Title	Page No.
1.5.8.	Medical Electrical Equipment	49
1.5.9.	Telecommunication equipment (For TEC CAB Designation)	52
1.5.10.	Miscellaneous Products	54
1.5.11.	Power Supplies & Stabilizers	54
1.5.12.	Safety Testing Facility	55
1.5.13.	Energy Efficiency of Domestic Electronic Appliances	56
<b>1.6</b>	<b>FLUID FLOW DISCIPLINE</b>	<b>57</b>
1.6.1.	Air & Gases	57
1.6.2.	Liquids	57
1.6.3.	Miscellaneous	57
<b>1.7</b>	<b>FORENSIC DISCIPLINE</b>	<b>58</b>
1.7.1.	Biological Sciences	58
1.7.2.	Chemical Science	58
1.7.3.	Crime scene Management	58
1.7.4.	Forensic Electronics & Computer Forensics	58
1.7.5.	Forensic Psychology	58
1.7.6.	Physical Science	58
1.7.7.	Miscellaneous	58
<b>1.8</b>	<b>MECHANICAL DISCIPLINE</b>	<b>59</b>
1.8.1	Automotive Components	59
1.8.2	Building, Infrastructure & Construction Materials	59
1.8.3	Heating, Ventilating, and Air Conditioning (HVAC)	63
1.8.4	Leather and Leather Products	63
1.8.5	Mechanical Properties of Metals	63
1.8.6	Metallography Test	63
1.8.7	Noise & Vibration	64
1.8.8	Paper & Paper products	64
1.8.9	Performance/Durability/ Safety Test	64
1.8.10	Plastics and Plastic Products	64
1.8.11	Precious Stones	65
1.8.12	Properties of Powder Metallurgical Products	65
1.8.13	Rubber and Rubber Products	65
1.8.14	Soil and Rock	65
1.8.15	Soil- Basic	65
1.8.16	Soil- Advanced	66
1.8.17	Soil- Field	66
1.8.18	Rock- Basic	67
1.8.19	Rock- Advanced	67
1.8.20	Solar Panel	67
1.8.21	Sub Assembly/Ancillaries/Accessories	67

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 6/91**

S.No.	Title	Page No.
1.8.22	Textile Materials	67
1.8.23	Thermal Tests	68
1.8.24	Toys and Similar products	68
1.8.25	Wood and Wood Products	68
1.8.26	Miscellaneous	69
<b>1.9</b>	<b>NON-DESTRUCTIVE TESTING DISCIPLINE</b>	<b>70</b>
1.9.1.	Building Materials – Reinforced Concrete Structures	70
1.9.2.	Metals and Alloys	70
1.9.3.	Miscellaneous	70
<b>1.10</b>	<b>PHOTOMETRY DISCIPLINE</b>	<b>71</b>
1.10.1.	Glasses/ Mirrors	71
1.10.2.	Light Sources (Electric Lamp)	71
1.10.3.	Luminaires	71
1.10.4.	Miscellaneous	71
<b>1.11</b>	<b>RADIOLOGICAL DISCIPLINE</b>	<b>72</b>
1.11.1	Environment (Radioactive contaminants)	72
1.11.2	Food and Agriculture Products (Radioactive contaminants)	72
1.11.3	Radiation Monitors	72
1.11.4	Radiation Sources	72
1.11.5	Radiological Equipment and Nucleonic Equipment	73
1.11.6	Water (Radioactive Contaminants)	73
1.11.7	Miscellaneous	74
	<b>CALIBRATION</b>	
<b>2.1</b>	<b>ELECTRO TECHNICAL DISCIPLINE</b>	<b>75</b>
2.1.1.	Alternating Current (< 1 GHz)	75
2.1.2.	Direct Current	75
2.1.3.	Electrical equipment	76
2.1.4.	EMI/ EMC	76
2.1.5.	RF/Microwave (1 GHz and Above)	77
2.1.6.	Temperature Simulation	77
2.1.7.	Time & Frequency	77
2.1.8.	Miscellaneous	77
<b>2.2</b>	<b>FLUID FLOW DISCIPLINE</b>	<b>78</b>
2.2.1.	Flow Measuring Devices	78
2.2.2.	Miscellaneous	78
<b>2.3</b>	<b>MECHANICAL DISCIPLINE</b>	<b>79</b>
2.3.1.	Acceleration & Speed	79
2.3.2.	Acoustics	79
2.3.3.	Density and Viscosity	79
2.3.4.	Dimension (Basic-Measuring Instrument, Gauges etc.)	79

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 7/91**

S.No.	Title	Page No.
2.3.5.	Dimension (Precision- Precision Instruments and Surface Topology)	80
2.3.6.	Hardness & Impact	81
2.3.7.	Force	81
2.3.8.	Mass and Volume	82
2.3.9.	Pressure and Vacuum	82
2.3.10.	Torque Generating & Measuring devices	82
2.3.11.	Miscellaneous	83
<b>2.4</b>	<b>OPTICAL CALIBRATION</b>	<b>84</b>
2.4.1.	Equipment	84
2.4.2.	Optical	84
2.4.3.	Miscellaneous	85
<b>2.5</b>	<b>RADIOLOGICAL DISCIPLINE</b>	<b>86</b>
2.5.1.	Radiological measurements	86
2.5.2.	Radio Isotope/Source Calibration	86
2.5.3.	Miscellaneous	86
<b>2.6</b>	<b>THERMAL DISCIPLINE</b>	<b>87</b>
2.6.1.	Specific heat & Humidity	87
2.6.2.	Temperature	87
2.6.3.	Miscellaneous	87
<b>2.7</b>	<b>MEDICAL DEVICES CALIBRATION</b>	<b>88</b>
2.7.1	Discharge Equipment/ Devices	88
2.7.2	Patient Conditioning/ Maintenance	88
2.7.3	Monitoring Unit	89
2.7.4	Imaging/ Plotters	89
2.7.5	Medical Device Analyzer/ Simulator Equipment	89
2.7.6	Miscellaneous	89

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033 | Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 8/91**



## INTRODUCTION

This is a guidance document which will help laboratories to define its scope as per the recommended classification of product groups across Testing and Calibration fields. Further, this document in no ways implies that QAI grants accreditation for these defined product group(s) only, rather it facilitates the laboratory to categorize its testing/calibration activities & calculation of fees while submission of application towards accreditation.

**Note: - Please refer QAI CLA 004 for Fee Structure**

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 9/91</b>

## 1. TESTING FIELD

### 1.1. BIOLOGICAL DISCIPLINE

#### (Classification of Product Groups for Biological Testing)

##### 1.1.1. Animal Food & Feed

- Animal Nutrition Supplements
- Aquaculture feed additives
- Aquaculture feed ingredients
- Cotton seed cake
- Fish, Shrimps, Prawn feed
- Groundnut meal
- Guar Meal
- Oil Cake
- Pet Foods
- Poultry feed additives
- Rapeseed Meal
- Others

##### 1.1.2. Antimicrobial activity Products

- Adhesives Glues and Sealant
- Fuels and Oils
- Lubricants
- Packaging Materials
- Paints and surface coatings
- Pulp & Paper
- Soaps & Detergents
- Textiles & Fabrics
- Toys and Other Children's Products
- Water Miscible Products
- Wood & Wooden Products
- Others

##### 1.1.3. AYUSH Products

- Ayurvedic drugs

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 10/91</b>

- Herbal formulations
- Homeopathic Drugs
- Siddha Drugs
- Unani Drugs
- Others

#### 1.1.4. Biocides

- Algicides
- Antiseptics
- Bactericides
- Disinfectants
- Fungicides
- Herbicides
- Insecticides
- Sanitizers
- Sporicides
- Viricides
- Weedicides
- Others

#### 1.1.5. Biological Monitoring

- Blood alcohol
- Drugs & Drug Metabolites
- Fluoride
- Interferons
- Others

#### 1.1.6. Biological Tests on Other Miscellaneous Test Items

- Adhesives Glues and Sealant
- Fuels and Oils
- Lubricants
- Packaging Materials
- Paints and surface coatings
- Pulp & Paper

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 11/91</b>

- Soaps & Detergents
- Textiles & Fabrics
- Toys and Other Children's Products
- Wood & Wooden Products
- Others

#### **1.1.7. Biologically Derived Pharmaceuticals**

- Enzymes
- Growth factors
- Hormones
- Monoclonal Antibodies (MABs)
- Recombinant Proteins
- Single Cell Proteins (SCP)
- Vaccines
- Others

#### **1.1.8. Biopesticides and Biofertilizers**

- Others

#### **1.1.9. Cell Culture**

- Cell permeability test
- Purity
- Others

#### **1.1.10. Cosmetics & Essential Oil**

- Perfumes
- Tooth Paste
- Hygiene products
- Cosmetics

#### **1.1.11. Drugs and Pharmaceuticals**

- Antibiotics
- Bioassays of Other Products (Other Than Those Products Mentioned Above)

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 12/91</b>

- Chemotherapeutic Agents
- Drug Intermediates
- Drug Substances (Active Pharmaceuticals Ingredients (API))
- Endotoxins
- Filtrable Solutions & Soluble Preparations
- Immunological Products
- Microbial limit test
- Non-Filterable Preparations Including Ointments
- Preservative efficacy
- Pyrogen tests
- Raw Materials
- Sterility tests
- Synthetic Drugs
- Veterinary Drugs
- Others

#### 1.1.12. Pollution & Environment

- Air /surface
- Bio burden Estimation of Classified and non-classified area
- Effluents/Waste water
- Sewage
- Soil
- Solid waste
- Others

#### 1.1.13. Food and Agricultural Products

- Bakery & Confectionery Products
- Beverages (Alcoholic / Non-Alcoholic)
- Canned & Processed Foods
- Cereals, Pulses & Cereal Products
- Coffee & Cocoa Products
- Edible Colors & Flavors
- Edible Oils & Fats

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 13/91</b>

- Edible Salts
- Eggs & Egg Products
- Essential Nutrients Including Vitamins
- Food Additives & Preservatives
- Fruit & Fruit Products
- Gelatin and Other Gums
- Herbs, Spices & Condiments
- Honey & Honey Products
- Infant Foods
- Jams, Juices, Sauces & Concentrates
- Meat & Meat Products
- Milk & Dairy Products (Except Human Milk)
- Natural Waxes
- Nuts & Nut Products
- Oil Seeds & By-Products
- Poultry & Poultry Products
- Snacks and Instant Mixes
- Starch & Starch Products
- Sugar & Sugar Products
- Tea
- Tobacco & Tobacco Products
- Vegetables & Vegetable Products
- Others

#### 1.1.14. Plants

- Plants
- Plants material
- Other

#### 1.1.15. GM Products

- Promoter & Terminator Screening
- Qualitative Detection
- Quantitative Analysis

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 14/91</b>

- Others

#### 1.1.16. Industrial Cultures

- Cultures for baking and brewing
- Dairy Starter Cultures
- Mushroom Spawn
- Probiotics Cultures
- Rhizobial Cultures
- Starter cultures for Effluent Treatment Plant
- Others

#### 1.1.17. Marine /Aqua culture Food Products

- Artemia & Artemia Products
- Crab & Crab Products
- Fish & Fish Products
- Molecular identification of bacterial, fungal, viral pathogens
- Oyster
- Prawn & Prawn Products
- Shrimps
- Others

#### 1.1.18. Medical Accessories & Surgical products

- Blood Bags
- Catheter
- Condoms
- Copper T
- Hypodermic Needles
- Tubal Rings
- Others

#### 1.1.19. Molecular Analysis (Tests for Various Matrices-Human, Plants, Animal, Microbial)

- 16S rDNA sequencing
- Bacterial Mutagenicity Tests
- Bacterial/ fungal/viral Pathogen Detection

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 15/91</b>

- Detection of adulterants
- Fragment Analysis
- Gene Expression /Gene Copy Number
- Genotyping
- Next Gen- Sequencing
- Sister Chromatid Exchange Tests
- Transformation Assays In Cell culture
- Others

#### 1.1.20. Nutraceuticals & Functional Foods

- Carotenoids
- Dietary Fibres
- Flavonoids
- Fortified Food
- Phytoestrogens
- Prebiotics
- Probiotics
- Soy Proteins
- Others

#### 1.1.21. Nutritional Supplements

- Others

#### 1.1.22. Plants and Plant Materials

- Identification of Bacterial /Fungal/Viral Pathogens
- Others

#### 1.1.23. Residue Analysis

- Antibiotic residue analysis by micro assay
- Others

#### 1.1.24. Resistance to Microbial Attack

- Electrical Components
- Leather & Leather Products
- Packaging Materials
- Paints and surface coatings

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 16/91</b>



- Textiles and Fabrics
- Timber and Allied Material
- Wood and Wood Products
- Others

#### 1.1.25. Seed Testing

- Germination
- GM Testing
- Purity
- Others

#### 1.1.26. Toxicology

- Acute Toxicity (oral, dermal, inhalation)
- Ame's test
- Cytogenetics
- Cytotoxicity
- Eye irritation test
- Mucous membrane irritation test
- Mutagenicity (In -vitro)
- Skin sensitization test
- In vitro studies using cell culture/chick embryos
- Material mediated Pyrogenicity
- Hemolytic properties of material (Hemocompatibility) Implantation (bone, muscle, Subcutaneous)
- Others

**Note:** - The parameters such as Acute Oral & Acute dermal toxicity on pharmaceuticals products as well as the tests on specific pesticide products shall not be considered for accreditation in accordance with ISO/IEC 17025:2017 as these are the studies on long term basis. However, tests on medical devices including surgical devices may be considered for accreditation as per ISO/IEC 17025:2017.

Institutional Animal Ethical Committee (IAEC) approval for acute studies (Systemic Toxicity Studies) is mandatory.

#### 1.1.27. Veterinary Testing

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 17/91</b>

- Specified tests in biochemistry, Haematology, cytopathology, histopathology, serology, parasitology
- Others

#### 1.1.28. Water

- Distilled /Demineralized Water
- Drinking Water
- Ground Water/ Surface Water
- Packaged Drinking Water
- Packaged Natural Mineral Water
- Water for Construction Purpose
- Water for industrial purpose
- Water for Medicinal Purposes
- Water for Processed Food Industry
- Water for Swimming Pool and Spas
- Water Purifiers
- Others

#### 1.1.29. Wild Life Forensic

- Others

#### 1.1.30. Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 18/91</b>

## 1.2. CHEMICAL DISCIPLINE

### (Classification of Product Groups for Chemical Testing)

#### 1.2.1. Adhesives

- Glues
- Natural gums
- Physical Properties
- Polymer based adhesives (Synthetic)
- Starch based adhesives
- Others

#### 1.2.2. Animal Food & Feeds

- Animal Nutrition Supplements
- Aquaculture feed additives
- Aquaculture feed ingredients
- Cotton seed cake
- Fish, Shrimps, Prawn feed
- Groundnut meal
- Guar Meal
- Oil Cake
- Pet Foods
- Poultry feed additives
- Rapeseed Meal
- Others

#### 1.2.3. Atmospheric Pollution

- Ambient air
- Ambient Noise Levels (Excluding vibration)
- Fugitive emission
- Meteorological Parameters
- Process/Vent Emissions
- Source Noise Levels (Excluding vibration) Particular Source to be specified
- Stack emission

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 19/91</b>

- Vehicle emission
- Work Environment and Indoor Air Quality
- Others

#### 1.2.4. AYUSH Products

- Ayurvedic drugs
- Herbal formulations
- Homeopathic Drugs
- Siddha Drugs
- Unani Drugs
- Others

#### 1.2.5. Building Material

- Aggregates
- Bitumen & asphalts
- Bricks & pre-casted blocks
- Cement
- Ceramics
- Concrete
- Construction chemicals
- Fly ash
- Gypsum & its products
- Lime
- Mortars
- Pozzolanic materials
- Refractory materials
- Sand
- Water-proofing compounds
- Others

#### 1.2.6. Corrosion tests

- Dezincification Tests
- Salt Spray Tests
- Other

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<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 20/91</b>

### 1.2.7. Cosmetics & Essential Oils

- Aromatic chemicals
- Cosmetics
- Essential oils and other natural fragrant raw materials
- Fragrances and Indian attars
- Herbal based cosmetics
- Intermediates and miscellaneous chemicals for cosmetics
- Synthetic essential oils
- Others

### 1.2.8. Drugs & Pharmaceuticals

- Capsules
- Chemical Methods
- Creams
- Drug Substance (API)
- Drops
- Gels
- Hormones
- Ointment
- Oral Liquids
- Oral Powders
- Parenteral Preparations
- Pharmaceutical Aid (Raw material except API)
- Physical and Physiological Methods
- Tablets
- Vitamins
- Others

### 1.2.9. Explosives & Pyrotechnics

- Ammunitions
- Explosive chemicals & allied materials

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 21/91</b>

- Industrial explosives & associated materials
- Physical Properties
- Pyrotechnics
- Others

#### 1.2.10. Fertilizers

- Bio-Fertilizer
- Fertilizer Mixtures
- Fortified Fertilizers
- Macronutrients
- Micronutrients
- Nitrogenous Fertilizers
- Phosphatic Fertilizers
- Potassic Fertilizers
- Others

#### 1.2.11. Fire Fighting Equipment's & Accessories

- Aqueous film forming foam concentrates
- Dry Chemical Powder
- Foam Concentrates
- Others

#### 1.2.12. Food & Agricultural products

- Bakery & confectionery products
- Beverages (Alcoholic / Non-alcoholic)
- Canned & processed foods
- Cereals, pulses & cereal products
- Coconut and coconut products/Natural Plant Derivatives/Products
- Coffee & cocoa products
- Edible colors & flavors
- Edible oils & fats
- Food additives & preservatives
- Fruit & fruit products
- Herbs, spices & condiments

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 22/91</b>

- Honey & honey products
- Infant food
- Jams, juices, sauces & concentrates
- Meat & meat products
- Milk & dairy products (except Human Milk)
- Natural waxes
- Nuts & nut products
- Oil seeds & by-products
- Poultry & poultry products
- Starch & starch products
- Sugar & sugar products
- Tea
- Tobacco & tobacco products
- Vegetables & vegetable products
- Others

#### 1.2.13. Plants

- Plants
- Plants material
- Other

#### 1.2.14. Gases

- Compressed Natural Gas (CNG)/ Piped Natural Gas (PNG)
- Gases for medical use and diving
- Industrial Gases
- Liquefied Gases
- Reference Gases & Mixtures
- Others

#### 1.2.15. Glass

- Clear glass
- Laminated Glass
- Reflective Glass
- Stain Glass

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 23/91</b>

- Textured or pattern glass
- Tinted glass
- Wired Glass
- Others

#### 1.2.16. Hazardous & Restricted Chemicals

- Automatic dispensers
- Computing & communications equipment
- Consumer electronics
- Large household appliances
- Leather products
- Lighting: lamps, lighting fixtures, light bulbs
- Paints
- Plastics & other polymeric products
- Power tools
- Prints
- Small household appliances
- Textile & Textile products
- Toys and sports equipment
- Zippers
- Others

#### 1.2.17. Industrial & Fine Chemicals

- Alcohols & Alcohols based Chemical
- Bleaching Earth / Activated Bleaching Earth
- Chemical used in Rubber Industry
- Chemical used in Textile Industry
- Chemicals used in Agriculture
- Chemicals used in Electronic industry
- Chemicals used in Leather Industry
- Chemicals used in Photographic Industry
- Chemicals used in Refrigeration industry
- Disinfectants

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 24/91</b>



- Electroplating Chemicals
- Inorganic Chemicals
- Organic Chemicals
- Others

#### 1.2.18. Inks, dyes & pigments

- Duplicating inks
- Dye intermediates
- Inorganic pigment powder & pastes
- Natural dyes & colouring materials
- Organic pigment powder & pastes
- Printing inks
- Synthetic dyes
- Writing inks
- Others

#### 1.2.19. Lac & Lac products

- Lac
- Lac products
- Others

#### 1.2.20. Leather

- Finished leather
- Leather accessories
- Leather products
- Semi-finished leather
- Synthetic leather
- Others

#### 1.2.21. Lubricants

- Aviation lubricants
- Insulation oils
- Lubricant additives
- Microcrystalline wax

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 25/91</b>

- Oils & greases
- Solid lubricants
- Others

#### 1.2.22. Marine /Aqua culture Food Products

- Artemia & Artemia Products
- Crab & Crab Products
- Fish & Fish Products
- Oyster
- Prawn & Prawn Products
- Shrimps
- Others

#### 1.2.23. Metallic coatings & treatment solutions

- Anodizing solutions
- Conversion coatings
- Metal finishing materials
- Metallic coatings
- Plating solutions
- Others

#### 1.2.24. Metals & Alloys

- Alloy steel
- Aluminum & its alloys
- Amalgam
- Carbon Steel (low carbon, medium carbon & high carbon steel)
- Chromium & its alloys
- Cobalt & its alloys
- Copper & its alloys
- Ferro-alloys
- Ferro-alloys
- Lead & lead alloys
- Magnesium & its alloys
- Nickel & its alloys

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 26/91</b>

- Precious metals
- Rare earth alloys
- Special Steel
- Stainless steel
- Tin and tin alloys
- Titanium & titanium alloys
- Tool steel
- Tungsten & its alloys
- Zinc & Zinc alloys
- Others

#### 1.2.25. Nutraceuticals & Functional Foods

- Carotenoids
- Dietary Fibers
- Flavonoids
- Fortified Food
- Phytoestrogens
- Prebiotics
- Probiotics
- Soy Proteins
- Others

#### 1.2.26. Nutritional Supplements

- Others

#### 1.2.27. Ores & Minerals

- Alkali Metal Ores
- Aluminium Ores
- Barium ore
- Chromium ores
- Cobalt ore
- Copper ores
- Gem & semi-precious stones
- Geochemical samples for trace elements

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 27/91</b>

- Gypsum
- Iron ores
- Lead ores
- Limestone & dolomite
- Manganese ores
- Mercury
- Mercury ore
- Mineral for insulation materials
- Mineral for refractories
- Mineral sands
- Minor elements
- Molybdenum Ores
- Nickel ores
- Precious metals ores
- Radioactive metals ores
- Rare metals ores
- Rock phosphate
- Silica sands
- Tin ores
- Titanium ores
- Tungsten ores
- Zinc ores
- Others

#### 1.2.28. Paints & Surface Coating

- Drying oils
- Gums, driers & paint removers
- Paints & enamels
- Physical Properties
- Pigments & extenders
- Polishes
- Powder coatings

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 28/91</b>

- Resin coatings
- Solvents & thinners
- Varnishes
- Others

#### 1.2.29. Paper and Pulp

- Composite packing material
- Newsprint and board packing material
- Paper
- Paper board
- Pulp
- Pulpwood
- Others

#### 1.2.30. Pesticide Formulations

- Aqueous Capsule Suspensions (CS)
- Aqueous Suspension Concentrates (SC)
- Aqueous Suspo-Emulsions (SE)
- Dispersible Concentrates (DC)
- Dustable Powders (DP)
- Emulsifiable Powders (EP)
- Emulsifiable Concentrates (EC)
- Emulsifiable Granules (EG)
- Emulsions for Seed Treatment (ES)
- Emulsions, Oil in Water (EW)
- Granules (GR)
- Liquid Vaporizers (LV)
- Long lasting insecticidal NETS or NETTING(LN)
- Micro- Emulsions (ME)
- Mixed Formulations of CS and EW(ZW)
- Mixed Formulations of CS and EW(ZW)
- Mixed Formulations of CS and SC(ZC)
- Mosquito Coils (MC)

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 29/91</b>

- Oil based Suspension Concentrates (OD)(Oil Dispersion)
- Oil Miscible Liquids (OL)
- Powders for Dry Seed Treatment (DS)
- Soluble Concentrates (SL)
- Solutions for Seed treatment (LS)
- Suspension Concentrates for Seed Treatment (FS)
- Tablets for Direct Application (DT)
- Technical Concentrates (TK)
- Ultra-Low Volume Liquids (UL)
- Vaporizing Mats (MV)
- Water Dispersible Granules (WG)
- Water Dispersible Powders for Slurry Seed Treatment (WS)
- Water Dispersible Tablets (WT)
- Water Soluble Granules (SG)
- Water Soluble Powders (SP)
- Water Soluble Powders for Seed Treatment (SS)
- Water Soluble tablets (ST)
- Wettable Powders (WP)
- Others

#### 1.2.31. Petroleum and Products

- Aviation fuels
- Crude petroleum
- Liquefied / compressed gases
- Petrochemicals, Petroleum solvents
- Petroleum additives
- Petroleum feed stocks
- Petroleum products
- Waxes and jellies
- Others

#### 1.2.32. Plastic & Resins

- Plastic films

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 30/91</b>

- Plastics & polymers
- Raw materials
- Resin
- Others

### 1.2.33. Pollution & Environment

- Effluents toxicity (Bioassay only qualitative- 90% survival of fish after 96 hours in 100 percent effluent)
- Municipal Solid wastes
- Soil/ Sediments
- Used/ Waste oil
- Waste Water (Effluents/Sewage)
- Wastes (Liquid/Slurry/Sludge/Solid/Semi-Solid)
- Others

### 1.2.34. Residues and contaminants in Food and Agricultural Products

- Antibiotics
- Chlorinated dioxins & dibenzofurans
- Halogenated hydrocarbons
- Mycotoxins
- Pesticides
- Phenols
- Poly Chlorinated Biphenyl
- Polycyclic aromatic hydrocarbons
- Polyhalogenated biphenyls
- Trace metal elements
- Others

### 1.2.35. Residues and contaminants in Water

- Antibiotics
- Chlorinated dioxins & dibenzofurans
- Halogenated hydrocarbons
- Mycotoxins
- Pesticides

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 31/91</b>

- Phenols
- Poly Chlorinated Biphenyl
- Polycyclic aromatic hydrocarbons
- Polyhalogenated biphenyls
- Trace metal elements
- Others

#### 1.2.36. Rubber & Rubber Products

- Hard rubber / ebonite Rubber
- Latex goods
- Natural / synthetic Latex
- Natural rubber
- Rubber compound
- Rubber Products
- Rubber vulcanizates
- Synthetic rubber
- Textile rubber composite
- Thermoplastic elastomers
- Others

#### 1.2.37. Soap detergent & Toiletries

- Detergent
- Soaps
- Toiletries
- Wetting & Emulsifying agent
- Others

#### 1.2.38. Soil and Rock

- Agriculture Soil
- Clays
- Rock
- Soil
- Stones
- Others

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 32/91</b>



### 1.2.39. Solid Fuels

- Briquettes
- Charcoal
- Coal
- Coal tar/Bitumen
- Coke
- Oil Shale
- Others

### 1.2.40. Textile

- Agro-textiles
- Automotive textiles
- Carpet & rugs
- Domestic Textiles
- Fibre & filaments
- Finished fabric
- Garments & Apparels
- Geo-textiles
- Grey Fabrics
- Industrial Textiles
- Made-ups
- Medical textile
- Packaging textiles
- Protective Textiles
- Sports textiles
- Technical textiles
- Terry Fabrics & its products
- Yarns & chords
- Others

### 1.2.41. Warfare Chemicals

- Blister Agents
- Blood Agents

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 33/91</b>

- Choking Agents
- Mustard Agents
- Nerve Agents
- Potential CW Agents
- Psychotomimetic Agents
- Riot Control Agents
- Toxins
- Others

#### 1.2.42. Water

- Construction Water
- Drinking Water
- Ground Water
- Industrial Water
- Irrigation water
- Packaged Drinking water
- Surface Water
- Swimming Pool Water
- Water from purifiers
- Others

#### 1.2.43. Bio-stimulant

- Antioxidants
- Anti-transpirants
- Bio -chemicals
- Botanical extracts, including seaweed extracts
- Cell free Microbials products
- Humic & fulvic acid and their derivations
- Protein hydrolysates and amino acids
- Vitamins
- Others

#### 1.2.44. Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 34/91</b>

### 1.3 DIAGNOSTIC RADIOLOGY QA TESTING DISCIPLINE

(Classification of Product Groups for Diagnostic Radiology QA Testing)

1.3.1. Radiography (X-ray -Fixed Portable, Mobile)

1.3.2. Computed Tomography (CT)

1.3.3. Mammography

1.3.4. Interventional Radiology & Fluoroscopy

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 35/91</b>

## 1.4 ELECTRICAL DISCIPLINE

### (Classification of Product Groups for Electrical Testing)

#### 1.4.1. Bridges & Potentiometers

- AC bridges
- AC potentiometers
- DC bridges
- DC potentiometers
- Ratiometers
- Others

#### 1.4.2. Cables and Wires

- Automobile cables
- Bare cables & wires
- Elastomeric cables
- Insulated cables & wires
- Joints & terminations of polymeric & power cables
- LF wires & cables with PVC insulation & sheath
- Paper insulated cables
- Power cables
- Thermo-couple compensating cables
- Welding cables
- Others

#### 1.4.3. Capacitors

- Capacitance attenuators
- Motor capacitors
- Precision capacitors
- Series capacitors
- Shunt capacitors
- Surge protection capacitors
- Others

#### 1.4.4. Cells and Batteries

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 36/91</b>

- Button cells
- Dry batteries
- Heavy duty batteries
- Lead acid batteries
- Nickel cadmium batteries
- Others

#### 1.4.5. Conductors and Conducting Materials

- Aluminum conductors
- Copper conductors
- Enameled / Insulated wires
- Paper covered conductors
- Winding wires
- Others

#### 1.4.6. Domestic Electrical Appliances

- Baking ovens
- Electric & steam irons
- Electric call bells & buzzers
- Electric coffee makers
- Electric food mixers & juicers
- Electric grills & roasters
- Electric kettles & jugs
- Electric shavers
- Electric steam cookers
- Electric stoves & hot plates
- Electric toasters
- Flexible heating pads
- Hair dryers
- Microwave ovens
- Refrigerators, food freezers & ice makers
- Vacuum cleaners & suction appliances
- Washing machines

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 37/91</b>

- Water heaters
- Others

#### 1.4.7. Electrical Indicating & Recording Instruments

- Ammeters
- Digital recorders
- Earth resistance tester
- Electricity meters
- Galvanometers & null detectors
- Graphic recording instruments
- Insulation resistance tester
- Ohmmeters
- Phase meters
- Power factor meters
- Transducers
- Varmeters
- Voltmeters
- Watthour meters
- Watt meters
- Others

#### 1.4.8. EMI / EMC Test Facility

- Fast transient burst test
- Immunity to conducted disturbances
- Immunity to electromagnetic HF fields
- Immunity to electrostatic discharge (ESD)
- Radio interference measurement
- Surge immunity test
- Others

#### 1.4.9. Environmental Test Facility

- Acceleration test
- Bump test
- Cold test

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 38/91</b>

- Damp heat test
- Driving rain
- Dry heat test
- Dust test
- Glow wire
- Impact test
- Ingress protection test
- Robustness of termination test
- Salt mist test
- Sealing test
- Seismic test
- Soldering test
- Storage test
- Vibration test
- Others

#### 1.4.10. Frequency & Time Measuring Instruments

- Clocks & watches
- Counters
- Frequency meters
- Stop watches
- Tachometers
- Time interval meters
- Wave meters
- Others

#### 1.4.11. High Voltage Test Facility

- Alternating voltage test
- Artificial pollution test
- Dielectric test
- Direct voltage test
- Impulse current test
- Lightning impulse voltage test

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 39/91</b>

- Partial discharge test
- Radio interference voltage test
- Switching impulse voltage test
- Wet test
- Others

#### 1.4.12. Inductors and Transformers

- Auto transformers
- Current transformers
- Distribution transformers
- Inductors
- Neutral earthing transformers
- Phase shifting transformers
- Power transformers
- Pulse transformers
- Ratio transformers
- Reactors
- Voltage transformers
- Others

#### 1.4.13. Insulating Materials & Insulators

- Antistatic materials
- Ceramics
- Electrical grade paper
- Insulating Oils
- Insulating tapes
- Insulating varnish
- Laminates
- Polymer films
- Polymers for cable insulation & sheath
- Rubber products
- Sleeving
- Transformer oils

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 40/91</b>



- Others

#### 1.4.14. Lamps, Luminaires and accessories

- Emergency lights
- Flood lights
- Fluorescent lamps
- General purpose luminaires
- Halogen lamps
- Industrial luminaires
- Lamp holders
- Mercury vapor lamps
- Portable luminaires
- Recessed luminaires
- Road & street light luminaires
- Sodium vapor lamps
- Starters, ballasts & capacitors
- Tungsten filament lamps
- Others

#### 1.4.15. Magnetic Materials

- Flux meters
- Magnetic sheets
- Magnets, solenoids & Helmholtz coils
- Others

#### 1.4.16. Miscellaneous

- AC / DC transfer instruments
- Plastic materials & products
- Others

#### 1.4.17. Power System and Stabilizers

- Stabilized power supplies (AC & DC)
- Servo operated voltage stabilizers (AC)
- Uninterrupted power systems (UPS)

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 41/91</b>

- Others

#### 1.4.18. Resistors, resistance boxes & potential dividers

- AC shunts
- Conductance boxes
- DC shunts
- Potential dividers
- Precision resistors
- Resistance boxes
- Volt ratio boxes
- Others

#### 1.4.19. Rotating Electrical Machines

- Alternators
- Centrifugal pumps
- Increased safety motors
- Induction motors
- Other pumps & motors
- Self-priming pumps
- Submersible pumps
- Universal motors
- Others

#### 1.4.20. Safety Testing Facility

- Others

#### 1.4.21. Short-Circuit Test Facility

- General tests on HV switchgear & control gear
- Inductive load switching on HVAC circuit-breakers
- Synthetic testing of HVAC circuit-breakers
- Others

#### 1.4.22. Switchgear & Protective Equipment

- Circuit breakers & controllers
- Fuses & fuse links

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 42/91</b>

- Motor starters
- Power system protection relays
- Protection & control relays
- Switches & isolators
- Time switches
- Others

#### 1.4.23. Transmission Line Equipment and Accessories

- Aluminum conductors
- Busbars
- Bushings
- Circuit breakers
- Conductor & earth wire accessories
- Electric power connectors
- Fuses
- Insulators
- Isolators & air brake switches
- Lightning arrestors
- Line traps
- Metal fittings
- Switch gear & control gear
- Transformers & capacitors
- Transmission line spacers / dampers
- Others

#### 1.4.24. Wiring accessories

- Adhesive / Insulating tape
- Cable trunking & ducting systems
- Ceiling roses
- Conduits
- Electronic type fan regulator
- Fittings
- Plugs & sockets

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 43/91</b>

- Switches
- Others

#### 1.4.25. Energy Efficiency of Domestic Electrical Appliances

- Ceiling Fans
- Direct Cool Refrigerator
- Distribution Transformer
- Electric Geysers
- Frost Free Refrigerators
- LPG -Stoves
- Room Air Conditioner (Cassettes, Floor Standing)
- Room Air Conditioners
- Tubular Florescent Lamp
- Variable Capacity Inverter Air conditioners
- Washing Machine
- Others

#### 1.4.26. Energy Efficiency of Commercial / Industrial Appliances

- Chillers
- Deep freezers
- DG Sets
- Diesel Engine Driven Mono-set Pumps
- Induction Motors
- Light Commercial Air Conditioner
- Pump Sets
- Solar Water Heater
- Others

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 44/91</b>

## 1.5 ELECTRONICS DISCIPLINE

### (Classification of Product Groups for Electronics Testing)

#### 1.5.1. Audio Equipment

- Amplifiers
- Buzzers & ringers
- Loud speakers / Head phones
- Microphones
- Others

#### 1.5.2. Domestic Electronic Appliances & Accessories

- AM / FM radio receiver
- Cassette players / recorders & its components
- CD players / recorders & its components
- DVD players/Blu Ray Players
- Electronic fan regulators
- LCD/LED Display/TV & its components
- Microwave ovens
- Picture tubes
- Static Energy meters (1  $\Phi$  and 3  $\Phi$ )
- TV antenna(dish)
- TV tuner/DTH (set-top box)
- Others

#### 1.5.3. Electronic Components & Equipment Sub-Assemblies

- Attenuators/AD-DA converters
- Capacitors
- Connectors
- Deflection yokes
- Diode
- Electronic Ballast
- Electronic Counters
- Filters

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 45/91</b>

- Fuses
- Inductive Coils
- Integrated circuits
- Laminates
- Mobile Phone – GSM
- Mobile Phone -CDMA
- Mux-demux
- Oscilloscope/Function generator/ signal generator
- Passive components
- Plugs (excluding power supply)
- Potentiometer
- Printed circuit boards
- Resistors
- Semi-conductor devices
- Solid State Relays
- Switches
- Tab / Note pad
- Transceivers
- Transformers (excluding power supply)
- Transistor Amplifiers
- Transistors
- Others

#### 1.5.4. EMC Test Facility

- Burst Immunity Test
- Conducted Emission Test
- Conducted RF Susceptibility Test
- Damped Oscillatory wave Immunity Tests
- Electrical Fast Transient (EFT)
- Electrostatic Discharge Immunity Test
- High Energy / Telecom Surge Immunity Test
- Impulse Voltage withstand Test

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 46/91</b>

- Power Frequency Magnetic Field Immunity Test
- Pulse Magnetic Field Immunity Test
- Radiated Emission Test
- Radiated Magnetic Field Emission Test
- Radiated Radio Frequency Disturbances Power Test
- RF Radiated Susceptibility Test
- Voltage dips, short interruption & voltage variations Immunity Test
- Voltage Fluctuation & Flicker Test
- Others

### 1.5.5. Environmental Test Facility

- Acceleration Test
- Bump Test
- Cold Test
- Composite Temperature & Humidity Test
- Damp Heat (Cyclic) Test
- Damp Heat (Steady State) Test
- Driving Rain Test
- Drop & Topple Test
- Dry Heat Test
- Impact Test
- Low Air Pressure Test / Altitude Test
- Mechanical Shock Test
- Mould Growth (Fungus) Test
- Protection against penetration of dust & water
- Robustness of Terminations Test
- Salt Mist Test
- Sand and dust Test
- Sealing Test (Gross \ Fine Leak)
- Seismic Test
- Solar Radiation Test
- Temperature Cycling Test

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 47/91</b>

- Thermal Shock Test
- Tropical Exposure Test
- Vibration Test
- Others

#### 1.5.6. Equipment Used in Clinical Laboratory

- Auto Clave
- Cell counter
- Centrifuge
- Cyclomixer
- Densitometer
- Electronic Analytical Balance
- Electrophoresis system
- ELISA reader
- ESR Analyser
- Hot Air oven
- Hot Air Sterilizer
- Hot plate
- Incubators
- Laminar Air Flow
- Microscope
- Na, K Analyzer
- Photometers (Colorimeter)
- Refrigerator
- Rotary shaker
- Semi autoanalyzer
- Sterilizer
- Urine analyzer
- VDRL shaker
- Water Bath
- Others

#### 1.5.7. IT Equipment

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 48/91</b>



- CPU/Disk drives/optical devices/Solid state drives/DIMM/Main board
- GPU/USB devices/Wi-Fi Hub/ PCI extension cards
- Keyboards
- Monitors / VDUs/Modem
- Network devices
- Personal computers / Laptop / Note Book/tablets
- Printers / scanner/Copier
- Servers
- Others

### 1.5.8. Medical Electrical Equipment

- ACT Machine
- Audiometer
- Auto Refractometer
- BIPAP Ventilator
- Blood Filtration Appliance
- Blood Fluid Warmer
- Blood Storage Cabinet
- Boyle's Apparatus
- BP Apparatus
- Brain Stimulators
- Breath Hydrogen (H<sub>2</sub>) monitor
- Capnography
- Cardiopulmonary bypass machine (CPB)
- CO<sub>2</sub> Monitor
- Coagulation Analyzer
- Cold light source
- Cryo Surgical Appliances (Heating Part)
- Cryostat
- CTG Machine
- Daytona
- Defibrillator

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 49/91</b>

- Dental X Ray
- Diagnostic Muscular Simulator
- Dialysis Apparatus
- Diode Laser. Doppler
- ECG Monitor
- Echo Cardiograph
- ECT machine
- EEG Machine
- Electro and Phonograph (Intra Cardiac)
- Electro Cardio Graph Recorder
- Electro Myography
- Electronic Traction
- Endoflator
- Endoscopy
- EOG Machine
- ETO Sterilizer
- Field Analyzer
- Fetal Monitor
- Glucometer
- Harmonic Scalpel
- Heart-Lung machine
- HF Surgical Diathermy
- High Pressure Injection Equipment
- Hypothermia Appliances
- Incubator with CO2
- Incubator (Stationary and Portable)
- Infusion Pumps
- Intelligent Tourniquet
- Interferential therapy
- Invasive Arterial Blood Pressure (IBP)
- IVF Work Station

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 50/91</b>

- Keratometer
- Laser Surgery equipment
- Lithotripsy (Impulse Apparatus)
- Magnetic Particle Imaging system (MPI)
- Magnetic Resonance Imaging system (MRI)
- Mammography
- Medical Laser Systems
- Multiparameter Monitor
- Muscles Stimulator (For Diagnostic and Therapy)
- Nebulizer
- Nerve Stimulators
- Non-invasive Blood Pressure
- Nuclear Magnetic Resonance Tomography
- Oxygen Concentration Monitor
- Pacemaker (External)
- Pachometer
- Patient Monitor
- Perfusion Pump
- Perdish Warmer
- Photo and Laser Coagulator
- Phototherapy Unit
- Pneumatic Drill
- Pressure Chambers for Hyper Baric Therapy
- Pulse Oximeter
- Radiant Heat Warmer
- Renal Dialysis machine
- Respirators (Not Manual)
- Retinal Camera
- Shortwave Diathermy
- Sigmoidoscopy
- Slit Lamp with Ophthalmoscope

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 51/91</b>

- Spirometry Devices
- Stadiometer
- Surgical Diathermy
- Syringe Pump
- Test Tube Warmer
- Therapeutic Ultrasound Device
- Tonometer
- Transcutaneous Electrical Nerve Stimulator
- Tread Mill
- Trivector Dry Bath
- Ultrasonic Diathermy
- Urine analyzer
- Vascular Infusion System
- VDRL shaker
- Ventilator (Adult & Infant)
- Water Bath
- Wax Bath
- Others

#### 1.5.9. Telecommunication equipment (For TEC CAB Designation)

- Base Station for Cellular Network
- BSC RNC
- Cell Broadcast Centre
- Compact Cellular Network
- Conferencing and Presentation Equipment
- Conferencing Equipment
- Cordless Telephone
- Cryptographic Controls (ITSAR)
- DSL Equipments
- End Point Device for Environmental Monitoring
- eNodeB (ITSAR)
- Equipments Operating in 2.4 GHz and 5 GHz Band

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 52/91</b>

- Feedback Device
- G3 Fax Machine
- GMLC
- HF Radio
- HLR AUC HSS
- Infiband Switch
- IoT Gateway
- IP Multimedia Conferencing Equipment
- IP Router (ITSAR)
- IP Router (ITSAR)
- IP Security Equipment
- IP Terminal
- ISDN Customer Premises Equipment
- LAN Switch
- Media Gateway
- Media Gateway
- Mobile Device (ITSAR)
- Mobile Handset
- Mobile Management Entity
- Mobile Radio Trunking System
- Mobility Management Entity (MME) (ITSAR)
- Modem
- Optical Fibre Cable
- P-GW/PDN-GW (ITSAR)
- Point of Sale Devices
- PON Family of Broadband Equipments
- Precision Timing Control
- Private Automatic Branch Exchange
- PTP PMP Microwave
- Repeater for Cellular Network
- Router

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 53/91</b>

- Satellite Communication Equipments
- Session Border Controller
- SGSN or GGSN
- Signalling Gateway
- Smart Camera
- Smart Electricity Meter
- Smart Watch
- Softswitch
- Tracking Device
- Transmission Terminal Equipment
- UICC (ITSAR)
- VHF UHF Radio System Equipments
- Wi-Fi CPEs (ITSAR)
- Wire Telephone Equipment
- Others

#### 1.5.10. Miscellaneous Products

- AC and DC Drives
- Anti-static accessories, wrist strap
- Electro-magnetic components & equipment
- Electro-mechanical components & equipment
- Fire alarm systems
- Franking machines
- Harness and cables
- Lighting equipment, LED display Board Controller
- Measuring instruments
- Opto-electronic components & equipment
- Photo-voltaic equipment
- Piezo electric devices
- Telephones/EPABX & Fax machines
- Transducers
- Others

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 54/91</b>

### 1.5.11. Power Supplies & Stabilizers

- Charge Controller
- Inverters
- Inverters (Charge controller unit)
- Regulated Power supplies (AC/DC)
- SMPS power supplies
- UPS (online/line interactive)
- Voltage stabilizers (step/servo motor operated)
- Others

### 1.5.12. Safety Testing Facility

- Abnormal operating and fault conditions
- Clearances and creepage distances
- Constructional requirements with regard to the protection against electric shock
- Electric shock hazard under normal operating conditions
- Electric strength test
- Hazardous radiations
- Heating under normal operating conditions
- Insulation resistance test
- Ionizing radiation
- Laser radiation
- Mandrel test
- Measurement of temperature rises
- Mechanical strength
- Over current and earth fault protection in primary circuits
- Protection against hazardous moving parts
- Protection from electric shock and energy hazards
- Protection from hazards
- Protection of equipment users from over voltages on telecommunication networks
- Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment
- Protection of the telecommunication wiring system from overheating

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 55/91</b>

- Provisions for earthing and bonding
- Resistance to fire, Touch current and protective conductor current
- Ultraviolet light conditioning test
- Others

### 1.5.13. Energy Efficiency of Domestic Electronic Appliances

- Ballast (Electronic/ Magnetic)
- Color TV
- Computer (Notebooks/Laptops)
- LED Lamps
- Microwave Oven
- Office equipment's (Printer, Copier, Scanner, MFD's)
- Solid State Inverter
- Others

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 56/91</b>



## 1.6 FLUID FLOW DISCIPLINE

### (Classification of Product Groups for Fluid Flow Testing)

#### 1.6.1 Air & Gases

- Air velocity devices (Anemometers & Pitot tubes)
- Flow metering devices in pipelines
- Flow rate controlling valves
- Flow rate measuring meters
- Leak rate of gases
- Others

#### 1.6.2 Liquids

- Flow metering devices in pipelines
- Flow rate controlling valves
- Flow rate measurement of corrosive liquids
- Flow rate measuring meters
- Leak rate of liquids
- Pumps & turbines
- Others

#### 1.6.3 Miscellaneous

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<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 57/91</b>

## 1.7 FORENSIC DISCIPLINE

### (Classification of Product Groups for Forensic Science Testing)

#### 1.7.1 Biological Sciences

- Biology & Serology
- DNA Fingerprinting
- Others

#### 1.7.2 Chemical Science

- Chemistry
- Explosive
- Narcotics
- Toxicology
- Others

#### 1.7.3 Crime scene Management

- Others

#### 1.7.4 Forensic Electronics & Computer Forensics

- Others

#### 1.7.5 Forensic Psychology

- Others

#### 1.7.6 Physical Science

- Ballistics
- Finger print
- Physics
- Photography
- Question document
- Others

#### 1.7.7 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 58/91</b>

## 1.8 MECHANICAL DISCIPLINE

### (Classification of Product Groups for Mechanical Testing)

#### 1.8.1 Automotive Components

- Bonded Rubber Wheels
- Complete Vehicle on Chassis Dynamometer
- Component Testing
- Internal Combustion Engine:
- Knock Characteristic of Fuel
- Others

#### 1.8.2 Building, Infrastructure & Construction Materials

- Adhesives, Pre-formed Joint Seals, Materials & Fillers
- Admixture
- Aggregates, Natural, Crushed, Recycled & Synthetic
- Anti-Striping Agent
- APP Membrane
- Ballast
- Bitumen, Modified Bitumen, Bitumen Felts & Bitumen Emulsion
- Bituminous Mix/ Bituminous Macadam/ Dense Bituminous Macadam
- Bituminous Mixes & Recycled (RAP) Mix Materials
- Block Board
- Block Jointing Mortar
- Bricks, Paver Blocks, Pavement Shapes
- Building Hardware, Fittings & Structural Fixtures
- Building Lime
- Burnt Clay Building Bricks
- Cement Concrete Flooring Tiles
- Cement grout (non-Shrink)
- Cement, Cementitious Materials & Cement Additives
- Ceramic tiles
- Chemical Grout

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 59/91</b>

- Chequered cement concrete tiles
- Coarse Aggregate
- Coated/Laminated Gypsum Boards
- Coating Material on Reinforcing Steel
- Coatings, Membrane & Film Forming Materials
- Composite Cement
- Concrete Admixtures Cement and Concrete
- Concrete Paving Blocks
- Concrete, Mortar, Shotcrete, Grout & Epoxy mixes Concrete Mixers
- Construction Chemicals & Performance Additives
- Curing Compound
- Doors & windows, Shuttering, Frames & Formworks
- Fasteners, Bolts, Nuts, Hooks, Rivettes & Washers
- Fibre Hard Boards
- Fine Aggregate
- Fire resistant Gypsum boards
- Fire Retardant Plywood
- Foundry Sand
- Fresh Cement Concrete
- Fuel Ash, Fly Ash, Pulverized Bottom Ash & Pond Ash
- Granular Subbase
- Gypsum Boards, False Ceiling & Cladding Materials
- Gypsum Building Plaster (Including Light Weight Premix)
- Hardened Cement Concrete
- High Alumina Cement
- High Strength aircraft Ply wood
- Hot Applied Sealing Compound for concrete
- Hydrophobic Portland Cement
- Integral Cement water proofing compound
- Integral Water proofing Compounds for Cement Mortar and Concrete
- Joint Reinforcing Tape, Seals & Modular Joints

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 60/91</b>

- Joint Treatment Materials for Gypsum Board Construction
- Low Heat Cement
- Macadam
- Marine plywood
- Medium Density Fibre Board
- Medium Strength Aircraft Ply wood
- Metakaolin
- Microfine Ordinary Portland Cement
- Mineral wool (Rock wool, Glass wool, Slag wool) & Bonded Mineral Wool-Thermal Insulation
- Moulded Raised High Density Fibre (HDF) panel Door
- Ordinary Portland Cement 33, 43, 53, Grades
- Ordinary Portland Cement 43S, 53S Grades
- Particle Board
- Pipes, Cast Iron, Cement, Steel, PVC, HDPE, PP & FRP
- Plain Gypsum Boards
- Plumbing & drainage fittings
- Plywood
- Plywood for General Purpose
- Portland Pozzolana Cement (Calcined Clay Based)
- Portland Pozzolana Cement (Fly Ash Based)
- Portland Slag Cement
- Pozzolanic materials, Slags, Industrial Waste & Ore Residues
- Precast Autoclaved Cellular (Aerated) Concrete Blocks
- Precast Hollow and Solid Concrete Blocks
- Preformed Fillers for expansion Joints
- Preformed Foam Cellular Concrete Blocks
- Pre-laminated Medium Density Fibre Board
- Prelaminated Particle Board
- Pre-stressing Materials & Anchorage Components
- Prestressing Strands H.T Strands /LRPC Strands
- Pulverised Fuel Ash Lime Bricks

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 61/91</b>

- Pulverized fuel Ash
- Rapid Hardening Portland Cement
- Ready Mixed Building Mortar
- Refractory Materials
- Refractory materials, Insulation Profiles & Shapes
- Reinforced Earth Mixes & RSW Embankment Materials
- Reinforced Gypsum Boards
- Reinforcement - Steel
- Reinforcement Steel and FRP & Structural Steel
- Retroreflective Signboards, Cones, RPM & Delineators
- Road Marking Materials Hot & Cold Applied, Tapes
- Road Marking Paints (Ready Mixed)
- Shuttering Plywood
- Silica Fume
- Solid panel Foam UPVC Door Sutters
- Sulphate Resisting Portland Cement
- Super sulphated Cement
- Thermoplastic Road Marking Material
- Tile adhesive
- Tile Grout
- Tiles- Concrete, Ceramic, Synthetic & Composite
- Timber
- Timber Panelled and Glazed shutters
- Timber Panelled and Glazed shutters Windows and Ventilator shutter
- Ultrafine Ground Granulated Blast Furnace Slag
- Veneered Decorative Plywood
- Veneered Particle Board
- Wall, floor, ceiling & Cladding Panels & Shapes
- Wet Mix Macadam
- White Portland Cement
- Wooden Flush Door shutter

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 62/91</b>

- Wooden Flush Door Shutters (Cellular and Hollow Core Type) (Ply wood panels)
- Others

### 1.8.3 Heating, Ventilating, and Air Conditioning (HVAC)

- Air Conditioners
- Condensing Unit
- Coolers
- Cooling Towers
- Heaters
- Refrigeration
- Others

### 1.8.4 Leather and Leather Products

- Finished leather
- Footwears
- Industrial Products
- Leather products
- Semi-finished leather
- Others

### 1.8.5 Mechanical Properties of Metals

- Biomaterials
- Copper materials, alloys & products
- Ferrous materials, alloys & products
- Metal powders & sintered products
- Metallic coatings
- Other Non-Ferrous metals, alloys & products
- Welds & welded test specimens
- Others

### 1.8.6 Metallography Test

- Aluminum materials, alloys & products
- Copper materials, alloys & products
- Ferrous materials, alloys & products

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 63/91</b>

- Metal powders & sintered products
- Metallic coatings
- Other Non-Ferrous metals, alloys & products
- Welds & welded test specimens
- Others

#### **1.8.7 Noise & Vibration**

- Dynamic Balancing
- Measurement of Insertion Loss Ducts and Mufflers
- Measurement of Mechanical Vibrations & Performance
- Measurement of Noise Reduction of Sound Isolating Enclosures
- Mechanical Shock Testing
- Vibration Characteristics of Materials, Components, Assemblies and Structures
- Vibration Record on Transmission Line
- Vibration Test on Connection and Relay
- Others

#### **1.8.8 Paper & Paper products**

- Paper
- Paper Board
- Pulp
- Pulpwood
- Others

#### **1.8.9 Performance/Durability/ Safety Test**

- Domestic Appliances
- Industrial Equipment /Instruments/Products
- Medical Equipment /Devices except Implants
- Scientific or Measuring Equipment
- Others

#### **1.8.10 Plastics and Plastic Products**

- Decorative laminates
- Fibre reinforced plastic products

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 64/91</b>



- Flexible & rigid foams
- Moulded components
- Packaging & containers
- Plastic films
- Plastic materials & products
- Plastic pipes and Accessories
- Plastic sheets
- Polymeric Products
- Others

#### **1.8.11 Precious Stones**

- Diamond
- Gemstones
- Pearl
- Studded Jewelry
- Others

#### **1.8.12 Properties of Powder Metallurgical Products**

- Stainless Steel
- Others

#### **1.8.13 Rubber and Rubber Products**

- Gaskets, seals & packings
- Industrial belts
- Natural rubber & products
- Synthetic rubber & products
- Tyres
- Others

#### **1.8.14 Soil and Rock**

- Classification test
- Clays & Soils
- Geophysical tests
- In-situ tests

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 65/91</b>

- Stones / Rock
- Others

#### 1.8.15 Soil- Basic

- California Bearing Ratio
- Consolidation Test
- Direct Shear test
- Free Swell Index
- Grain size Analysis – Dry, Wet & Hydrometer
- Heavy Compaction
- Light Compaction
- Liquid Limit / Plastic Limit
- Shrinkage limit
- Specific Gravity – Coarse Grained Soil
- Specific Gravity – Fine Grained Soil
- Triaxial (UU)
- Unconfined Compression Strength
- Water content

#### 1.8.16 Soil- Advanced

- Laboratory Permeability
- Relative Density Test
- Swelling Pressure
- Triaxial (CD)
- Triaxial (CU)

#### 1.8.17 Soil- Field

- A--Vertical Load (Compression)
- B - Lateral Load
- C - Pull Out Test (Uplift)
- Cyclic Plate Load Test
- Determination of Dry Density of soil in place by Core-cutter Method
- Determination of Dry Density of soil in place by Sand Replacement Method
- Dynamic Cone Penetration Test

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 66/91</b>

- Electrical Resistivity
- Field CBR test
- Field Vane Shear Test
- Modulus of Subgrade Reaction
- Pile Load Test
- Plate Load Test
- Standard Penetration Test
- Static Cone Penetration Test

**1.8.18 Rock- Basic**

- Compressive Strength
- Point Load Index Test
- Water Content, Density & Porosity

**1.8.19 Rock- Advanced**

- Brazilian Test
- Modulus of Elasticity
- Slake Durability Index

**1.8.20 Solar Panel**

- Others

**1.8.21 Sub Assembly/Ancillaries/Accessories**

- Bearing
- Compressors
- Cutting & hand tools
- Engines
- Lifting gear, chain, wire ropes & strands
- Pipes, hoses, valves & fittings
- Pumps
- Springs
- Springs & energy absorbing devices
- Threaded fasteners
- Others

**1.8.22 Textile Materials**

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 67/91</b>

- Agro Textiles
- Automotive Textiles
- Carpet and Rugs
- Coated fabrics
- Fabrics (Woven and Non-Woven)
- Fibre ropes & cords
- Fibres
- Garments and Apparel
- Geo Textiles
- Handloom textiles
- Industrial textiles
- Jute & its products
- Khadi textiles
- Medical Textiles
- Packaging Textiles
- Protective Textiles
- Sports Textiles
- Technical Textiles
- Upholstery fabrics (other than automotive)
- Wool & its products
- Yarns
- Zippers & fasteners
- Others

#### 1.8.23 Thermal Tests

- Ageing Test
- In Combustibility Test
- Insulating Value
- Thermal Conductivity
- Thermal Shrinkage
- Others

#### 1.8.24 Toys and Similar products

- Others

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<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 68/91</b>

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**1.8.25 Wood and Wood Products**

- Plyboard
- Timber
- Others

**1.8.26 Miscellaneous**

<b>Quality and Accreditation Institute</b>		
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<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 69/91</b>

## 1.9 NON-DESTRUCTIVE TESTING DISCIPLINE

### (Classification of Product Groups for Non-Destructive Testing)

#### 1.9.1 Building Materials – Reinforced Concrete Structures

- Carbonation test
- Cover Meter Test
- Crack width measurement in reinforcement concrete structures
- Deflection measurement data (Load Test)
- Half Cell Potential difference test
- Pile Integrity test
- Rate of Corrosion test by LPR (Linear polarization resistance)
- Rebound Hammer Test
- Ultrasonic Pulse Velocity Tests
- Others

#### 1.9.2 Metals and Alloys

- Eddy Current Testing facility
- Emerging Areas Testing Facility
- Leak Testing Facility
- Magnetic Particle Testing
- Penetrant Testing Facility
- Radiography Testing Facility
- Ultrasonic Testing Facility
- Under Water Testing Facility
- Others

#### 1.9.3 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 70/91</b>

## 1.10 PHOTOMETRY DISCIPLINE

### (Classification of Product Groups for Photometry Testing)

#### 1.10.1 Glasses/ Mirrors

- Mirrors
- Reflectors
- Safety Glass
- Others

#### 1.10.2 Light Sources (Electric Lamp)

- Color Characteristics
- Initial Rating Test
- Life Test
- Luminous Flux Output
- Others

#### 1.10.3 Luminaires

- Ballast Lumen Factor
- Downward & Upward Light Output Ratio (DLOR/ULOR)
- Luminous Intensity Distribution
- MHI Value in Lumens
- Others

#### 1.10.4 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 71/91</b>

## 1.11 RADIOLOGICAL DISCIPLINE

### (Classification of Product Groups for Radiological Testing)

#### 1.11.1 Environment (Radioactive contaminants)

- Air
- Air Filters
- Liquid effluents
- Ores, Minerals & Metals
- Soil, Vegetation, Biota
- Wipes, swabs
- Others

#### 1.11.2 Food and Agriculture Products (Radioactive contaminants)

- Bakery & Confectionary
- Crops & Crops produce
- Marine foods
- Meat & Meat products
- Milk & Milk products
- Poultry products
- Spices & food ingredients
- Others

#### 1.11.3 Radiation Monitors

- Area survey instruments
- Control monitors
- Environmental radiation monitors
- Fixed monitors
- Personnel monitoring dosimeter
- Therapy level dosimeter
- Others

#### 1.11.4 Radiation Sources

- Accelerators
- Beam welding equipment

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 72/91</b>



- Brachytherapy
- Cesium machines
- Cobalt machines
- Diffraction X-ray machines
- Electron Industrial irradiators
- Industrial Accelerators
- Isotopic sources used in industrial gauges
- Isotopic sources used in medical brachy therapy
- Medical Accelerators
- Neutron generators
- Simulators
- Others

#### 1.11.5 Radiological Equipment and Nucleonic Equipment

- Gamma switches
- Industrial gamma radiography
- Industrial irradiators
- Liquid scintillation counter
- Medical gamma camera
- Medical spectrometer
- Nucleonic level gauges
- Nucleonic moisture and density gauges
- Nucleonic weighing machines
- Radiography camera
- RIA counter
- Smoke detectors containing sources
- Thickness gauges
- Others

#### 1.11.6 Water (Radioactive Contaminants)

- Drinking water
- Packaged drinking water
- Treated water
- Water for Industrial use

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 73/91</b>

- Others

### 1.11.7 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 74/91</b>

## 2. CALIBRATION FIELD

### 2.1 ELECTRO TECHNICAL DISCIPLINE

#### (Classification of Product Groups for Electro Technical Calibration)

##### 2.1.1 Alternating Current (< 1 GHz)

- AM Modulation
- Attenuation
- Capacitance
- Current
- Dielectric loss angle
- Dissipation factor
- Dissipation factor
- Distortion
- Energy
- FM Modulation
- High Voltage (1 kV and above)
- Impedance
- Inductance
- Phase angle
- Power
- Power factor
- Reflection Coefficient
- Resistance
- Voltage
- Voltage & current ratio
- Others

##### 2.1.2 Direct Current

- Capacitance
- Current
- High Voltage (1 kV and above)
- Inductance

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 75/91</b>

- Power
- Resistance
- Voltage
- Voltage & current ratio
- Others

### 2.1.3 Electrical equipment

- Bridges
- Conductivity Meter (Simulation method)
- CT-VT Comparator
- Current Transformers
- Oscilloscope
- Oscilloscopes
- Oxidation Reduction Potential Meter (Simulation method)
- pH meter (Simulation method)
- Turbidity Meter (Simulation method)
- Voltage Transformers
- Others

### 2.1.4 EMI/ EMC

- Antenna Factor
- Attenuation
- Automotive Transient Generator
- Coupling Factor/ Coupling Loss Directivity
- Conducted RF Test System
- Combination Wave Surge Test System
- Damped Oscillatory Wave Generator
- Decoupling of Common Mode Disturbance
- Electrostatic Discharge
- Electrical Fast Transients
- EMI Test Receiver
- Isolation
- Impulse Voltage
- Impulse/ Immunity Generator

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 76/91</b>

- Insertion Loss/ RF Attenuation
- Impedance
- Longitudinal conversion Loss
- Preamplifier Gain
- Phase angle
- RF Power Amplifier
- Ring Wave Generator
- Telecom Surge Test System
- Return loss (VSWR)
- Voltage Dips/ Interruptions
- Voltage Division Factor
- Others

#### 2.1.5 RF/Microwave (1 GHz and Above)

- AM Modulation
- Attenuation
- FM Modulation
- Impedance
- Power
- VSWR
- Others

#### 2.1.6 Temperature Simulation

#### 2.1.7 Time & Frequency

- Frequency counters
- Frequency meters
- H.F. frequency
- L.F. frequency
- Microwave/RF frequency
- Stop watches
- Time interval
- Timers
- Others

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 77/91</b>

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## 2.1.8 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 78/91</b>

## 2.2 FUIID FLOW DISCIPLINE

### (Classification of Product Groups for Fluid Flow Calibration)

#### 2.2.1 Flow Measuring Devices

- Anemometers
- Averaging Pitot Tubes
- Flow Cup
- Flow Nozzles
- Ford Cup
- Gas flow meters
- Liquid flow meters
- Orifice meters
- Orifice Plates
- Pitot tubes
- Rotameter
- Top Loading Calibrator
- Turbine Meter
- Venturi Meters
- Others

#### 2.2.2 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 79/91</b>

## 2.3 MECHANICAL DISCIPLINE

### (Classification of Product Groups for Mechanical Calibration)

#### 2.3.1. Acceleration, & Speed

- Accelerometer
- Centrifuge
- Flow Table
- Planetary Mixer
- Speed Transducer / Sensor / Indicator
- Speedometer
- Stroboscope
- Tachometer
- Vibration Machine/Table
- Others

#### 2.3.2. Acoustics

- Audiometers
- Sound calibrators
- Sound level meters
- Others

#### 2.3.3. Density and Viscosity

- Capillary Viscometer
- Densitometers
- Dial type Viscometer
- Digital Viscometer
- Flow / Ford Cup
- Hydrometers
- Others

#### 2.3.4. Dimension (Basic-Measuring Instrument, Gauges etc.)

- Angle Measuring Devices
  - (Angle Gauges, Bevel Protractors, Combination Set, Sine Centre, Sine Bar & Sine Table, Spirit Levels, Frame Level, Electronic Level, Inclinator,

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 80/91</b>



Clinometers, Auto Collimator, Polygon Mirrors, Prisms, Rotary Table, Index Table, Rotary Calibrator)

- Bench Micrometre & Micrometre Head, Bore Gauges, Stick Micrometres, Tripoint Internal Micrometres, Depth Gauges, Dial Gauge, Steel Scales & Line Standards, Measuring Tape, Pie-Tape, Extensometer)
- Depth Micrometres,
- External Micrometres,
- Gauges
  - (Setting Master, Plug Gauges, Plug Gauges, Setting Master Ring Gauges, Ring Gauges, Snap Gauges, Taper Gauges)
- Linear - Measuring Aids
  - (Straight Edges, Engineers Parallels, Surface Plate (Cast Iron), Surface Plate (Granite), Angle Plates, Right Angle & Box Angle Plates, Engineers Square, Granite Squares, Cylindrical Square, V-Block, Welded V- Blocks, Universal and Elongated V-Blocks, Test Mandrels (Straight), Test Mandrels (Taper), Bench Centre, Vernier Height Gauge)
- Linear - Measuring Instruments
- Micrometre Head,
- Micrometre Setting Pieces,
- Surface Topography Measuring Devices
  - (Surface Roughness Masters, Depth Masters, Radius Standards, Master Sphere For CMM, Optical Flats, Optical Parallels, Hemi-Sphere (Roundness Master), Magnification Master (Flick Standard), Master Cylinder, Cylindrical Square, Roughness Tester-Portable, Roughness Tester- Stand Alone, Contour Profiler, Roundness Tester, Form Tester)
- Vernier & Digital Callipers,
- Others

### 2.3.5. Dimension (Precision- Precision Instruments and Surface Topology)

- Linear – Reference (Measuring) Equipment
  - (Gauge Block Comparators, Microscope/ Universal Length Measuring Machine (ULM), Length Measuring Machine, Universal Measuring

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 81/91</b>

Microscope (UMM), Profile Projector, Bore Comparator, Dial Gauge Calibrator, Floating carriage Micrometre, Coordinate Measuring Machines, Laser Interferometer, Flatness Interferometer)

- Linear & Form – Reference Equipment
  - (Gauge Blocks, Gauge Block Accessories, Long Gauge Blocks, Length Bar, Step Gauges, Calliper Checker, Check Master, Height Setting Micrometres, Electronic Height Gauges, Height Master, Raiser Blocks, Cylindrical Setting Standards, Roundness Master S (Hemi-Sphere, Magnification Standard, Master Cylinder, Optical Flat), Surface Roughness Masters (Surface Masters, Depth Standard), Radius Standard/ Contour Master, Glass Scale, Graticule and Glass Grid)

### 2.3.6. Hardness & Impact

- Durometer
- Impact testing machine (Charpy)
- Impact testing machine (Izod)
- Knoop Hardness
- Rubber hardness tester
- Test blocks, Brinell
- Test blocks, Rockwell
- Test blocks, Vickers
- Testing machines, Brinell
- Testing machines, Rockwell
- Testing machines, Vickers
- Others

### 2.3.7. Force

- Compression testing machines
- Force gauges
- Force Proving Instruments
- Load cells
- Mobile Force Measuring System
- Proving Ring
- Push Pull Gauge

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 82/91</b>

- Tensile testing machines
- Universal Testing Machine
- Others

### 2.3.8. Mass and Volume

- Burettes
- Mass/Weight Standards
- Pipettes
- Piston operated volumetric apparatus
- Volumetric flask
- Volumetric Glassware
- Weighing machine/scale

### 2.3.9. Pressure and Vacuum

- Barometer
- Differential Pressure Gauge
- Hydraulic DWT/Pressure Balance
- Industrial Pressure Gauge (analog/dig)
- Magnahelic Gauge, Pirani Gauge
- Manometer
- Pneumatic DWT/Pressure Balance
- Precision Pressure Calibrator
- Pressure recorders
- Pressure Switches
- Pressure transducer with digital indicator
- Pressure transmitter with digital indicator
- Vacuum Gauge
- Vacuum/Absolute DWT/Pressure Balance
- Others

### 2.3.10. Torque Generating & Measuring devices

- Continuous rotating torque tool (Oil Pulse/Pneumatic/Electrical/Hydraulic)
- Handheld pneumatic assembly tools
- Hydraulic impulse tools
- Impact torque wrenches/Tools

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 83/91</b>

- Rotary and percussive pneumatic Tools
- Torque controlled DCNR
- Torque Multiplying Gearbox
- Torque Testing Machine
- Torque Transducer
- Torque Transmitters
- Torque Wrenches (Type I & II)
- Others

### 2.3.11. Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 84/91</b>

## 2.4 OPTICAL CALIBRATION

### (Classification of Product Groups for Optical Calibration)

#### 2.4.1 Equipment

- Infrared radiometers
- Optical and radiation detectors
- Ultraviolet radiometers
- Others

#### 2.4.2 Optical

- Attenuation
- Colour/Chromaticity co-ordinates
- Colour temperature
- Distribution of luminous intensity
- Illuminance
- Irradiance
- Laser power & energy measurements
- Length
- Luminance
- Luminous intensity
- Luminous flux
- Lux Meter
- Power
- Radiance (UV/IR)
- Radiant Power/ Radiant Flux
- Transmittance
- Spectral irradiance
- Spectral radiance
- Spectral reflectance
- Spectral responsivity
- Wavelength
- Others

**Quality and Accreditation Institute**

**Centre for International Accreditation**

**Doc. No.: QAI CIA 033**

**Guidance for Classification of Product Groups in Testing & Calibration Field**

**Issue No.: 02**

**Issue Date: November 2023**

**Page No.: 85/91**

### 2.4.3 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 86/91</b>

## 2.5 RADIOLOGICAL DISCIPLINE

### (Classification of Product Groups for Radiological Calibration)

#### 2.5.1 Radiological measurements

- Area Survey Meter
- Dosimeter
- Others

#### 2.5.2 Radio Isotope/Source Calibration

#### 2.5.3 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 87/91</b>

## 2.6 THERMAL DISCIPLINE

### (Classification of Product Groups for Thermal Calibration)

#### 2.6.1 Specific heat & Humidity

- Absolute humidity
- Dew point
- Environmental chambers
- Humidity measuring devices
- Relative humidity
- Specific heat of gases
- Specific heat of liquids
- Specific heat of solids
- Others

#### 2.6.2 Temperature

- Digital temperature indicators & recorders
- Liquid-in-glass thermometers
- Optical pyrometers
- Platinum resistance thermometers
- Radiation pyrometers
- Temperature controlled autoclaves, ovens & furnaces
- Temperature controlled chambers & incubators
- Temperature controlled freezers & refrigerators
- Temperature measurement
- Thermocouples
- Others

#### 2.6.3 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 88/91</b>



## 2.7 MEDICAL DEVICES CALIBRATION

### (Classification of Product for Medical Devices Calibration)

#### 2.7.1 Discharge Equipment/ Devices

- Anesthesia Machine
- BiPAP
- Boyles Apparatus
- BP Apparatus (Sphygmomanometer)
- CPAP
- Enteral Feeding Pump
- Flow meter with Humidifier
- Infusion Pump
- Nebulizer (Electric)
- Pressure Gauge of Oxygen Cylinder
- Suction Pump
- Syringe Pump
- Others

#### 2.7.2 Patient Conditioning/ Maintenance

- Autoclave
- Defibrillator
- Dialysis Machine
- Electro Surgical Unit/ Diathermy Machine/ Cautry Machine.
- Electronic Tourniquet
- External Pace Maker
- Heart Lung Machine
- Incubator
- Irradiance Meter
- OT Table
- Patient Warmer
- Phototherapy Unit
- Radiant Warmer

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 89/91</b>

- Ventilator
- Others

### 2.7.3 Monitoring Unit

- Apnea Monitors
- Fetal Monitor
- Hematology Analyser
- Patient Monitors
- Therapeutic Stimulator
- Weighing Scale
- Others

### 2.7.4 Imaging/ Plotters

- ECG
- EEG
- Fetal Doppler
- Trans illuminator light source
- X-Ray Diagnostic Equipment
- Others

### 2.7.5 Medical Device Analyzer/ Simulator Equipment

- Defibrillator Analyzer
- Electrical Safety Analyzer
- Electro Surgical Analyzer
- Gas Flow Analyzer
- Incubator Analyzer
- Infusion Device Analyzer
- Patient Monitor Simulator
- Vital Sign Simulator
- Others

### 2.7.6 Miscellaneous

<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 90/91</b>

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<b>Quality and Accreditation Institute</b>		
<b>Centre for International Accreditation</b>		
<b>Doc. No.: QAI CIA 033</b>	<b>Guidance for Classification of Product Groups in Testing &amp; Calibration Field</b>	
<b>Issue No.: 02</b>	<b>Issue Date: November 2023</b>	<b>Page No.: 91/91</b>