Technical Description

Jewellery

Creative Arts and Fashion

worldskills

WorldSkills International, by a resolution of the Competitions Committee and in accordance with the Constitution, the Standing Orders and the Competition Rules, has adopted the following minimum requirements for this skill for the WorldSkills Competition.

The Technical Description consists of the following:

Effective 22.08.18

Stefan Praschl
Chair of the Competitions Committee

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Vice Chair of the Competitions Committee

1 INTRODUCTION

1.1 NAME AND DESCRIPTION OF THE SKILL COMPETITION

1.1.1 The name of the skill competition is

Jewellery

1.1.2 Description of the associated work role(s) or occupation(s).

The skill of jewellery making consists of the manufacture of fashion accessories using precious metal.

A jewellery maker can make exclusive individual pieces for use, pieces ready to be set with precious gemstones or prototypes for reproduction in numbers through lost-wax casting.

A jewellery maker will usually work from detailed drawings created through direct consultation with a client or by a jewellery designer. These designs can be developed by the jeweller through the use of hand sketching or the use of Computer Aided Design. They will therefore need to be able to correctly interpret these drawings to create a jewellery piece as envisioned by themselves or a designer. A jewellery maker must be able to respect the shapes and forms of the design concept and should be able to interact if dealing with a designer, giving and receiving feedback regarding the manufacturing process. A jewellery maker's skill may require working directly with clients as there may not always be intermediaries involved.

A jewellery maker may also be required to replicate a piece directly, or use jewellery making skills to renovate or repair an existing piece.

Dealing with precious metals, a jewellery maker needs to be precise, work economically and avoid wastage of materials. The work is intricately detailed and requires a high level of skill, focus, and concentration. Once the jewellery maker has finished a piece it may progress to further phases of the manufacturing process requiring goldsmith's industry skills other than jewellery making, such as gem-setting and casting.

For this reason, a jewellery maker must have some knowledge and understanding of other goldsmith's industry skills. They must, for example, have an appreciation of gemstones, their characteristics, cuts, uses and impact on the finished piece. Similarly, they must be aware of the different phases of reproduction through casting.

Jewellery makers will work in a goldsmith's workshop using specialist tools and equipment. Due to the intricate nature of the work, many of the tools are delicate and therefore need to be used and handled with extreme care. Some jewellery makers may be independent, but more often they will work in a workshop with other jewellery makers or technicians with other specialist goldsmith's industry skills. They must always observe skill-specific health and safety procedures and regulations.

Jewellery is made from precious metals and gemstones, which are highly valuable. A jewellery maker must therefore act with complete honesty and integrity and be fully aware of security and the regulations relating to the purchase, production and sale of precious metals, gemstones, and finished pieces.

1.1.3 Number of Competitors per team

Jewellery is a single Competitor skill competition.

1.1.4 Age limit of Competitors

The Competitors must not be older than 22 years in the year of the Competition.

1.2 THE RELEVANCE AND SIGNIFICANCE OF THIS DOCUMENT

This document contains information about the standards required to compete in this skill competition, and the assessment principles, methods, and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

1.3 ASSOCIATED DOCUMENTS

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSI – Competition Rules
- WSI – WorldSkills Standards Specification framework
- WSI – WorldSkills Assessment Strategy
- WSI Online resources as indicated in this document
- WorldSkills Health, Safety, and Environment Policy and Regulations

2 THE WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

2.1 GENERAL NOTES ON THE WSSS

The WSSS specifies the knowledge, understanding, and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSSS).

The skill competition is intended to reflect international best practice as described by the WSSS, and to the extent that it is able to. The Standards Specification is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standards Specification is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards Specification. This is often referred to as the "weighting". The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those skills that are set out in the Standards Specification. They will reflect the Standards Specification as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

2.2 WORLDSKILLS STANDARDS SPECIFICATION

SECTION		RELATIVE IMPORTANCE (%)
1	**Work organization and management**	**20**
	The individual needs to know and understand: • Procedures for checking and maintaining specialist individual tools and shared workshop tools and machines • Safe operation and maintenance of shared workshop machines and individual tools • Procedures for the secure storage of jewellery and materials • Risks attached to the use of natural and propane gas, oxygen, electricity, acid, and chemical products • Legislation and best practice relating to health and safety • Legislation and regulations relating to the purchase, production and sale of precious metals, gemstones and finished pieces • History and tradition of specialist jewellery making techniques used in past periods and in different countries • Specialist terminology relating to precious metals and jewellery making • Out-sourcing to external contractors for the purposes of electro-plating and the electro-plating process, gemstone mounting and the gemstone mounting process.	

	The individual shall be able to:
	• Provide expert advice and guidance on jewellery manufacturing techniques for a specific design proposal
	• Assess and plan for the separate tasks and operations necessary for the manufacture or repair of jewellery components and assembly of completed jewellery pieces
	• Accurately interpret proposals for manufacture of jewellery components or complete jewellery pieces including:
	  • Technical drawings
	  • Sample pieces
	  • Sketches or rendered images from 3D digital models
	• Interpret technical terminology and symbols
	• Determine time, materials and equipment necessary to complete projects
	• Work with a high degree of accuracy and precision on fine and delicate pieces
	• Apply correct procedures for reduction of wastage and retention of precious metal filings for re-use
	• Comply with the health and safety regulations and procedures of the country or region where working
	• Use personal protective equipment (PPE) and clothing sturdy enough to protect the user from small pieces of flying or incandescent metal
	• Operate machinery and tools in a manner that avoids risk to him/herself or others within the workshop
	• Proactively maintain continuous professional development in order to aware of fashion trends in jewellery design, specialist manufacturing techniques and developments in technology	

2	Design jewellery components	10
	The individual needs to know and understand • Design resources and where to locate them • Research techniques and available resources • Social trends, cultural/environmental/social context • Relevant industry literature • Existing designs, ethical and competitive considerations • Applicable industry standards or regulations • Brainstorming techniques for research/idea development • Design principles including form, function, harmony, line definition (interpretive/actual) • Drawing media and their functions/applications including paper, watercolour, pastel/ink/pencil • Drawing tools and their functions/applications including stencils, rubbers etc. • Computer Aided Design software • Design documentation • Form drawing development • Geometric forms and drawing techniques e.g. cones, cylinders, cube, rectangle, sphere etc. 3D concept, axis lines, conversion of 2D to 3D concepts, depth, perspective and scale (1,2,3 point) • Enhancement techniques • Available manufacturing technologies and their suitability for jewellery manufacture • Types of working drawings and their uses • The inter-relation between technical and design drawings • Industry requirements and availability of industry expertise • Hazard and control measures associated with preparing jewellery designs • Safe work practices	
	The individual shall be able to: • Read and interpret information on specifications, design documentation, illustrations, design drawings and other applicable source documents • Identify purpose and needs, including design restraints, budget considerations, item end-use, proportions and desired features, available materials • Check and clarify information • Develop research/ideas to sufficient level to determine customer expectations and/or design outcomes • Evaluate abstract and applied concepts/data for use in a commercial environment • Interpret design concepts/drafts as appropriate for client/industry technician • Collect and collate data relevant to design • Communicate concepts in terms suitable to relevant customer or other contacts e.g. engineer, master pattern maker • Document and maintain design processes, features and design development notes • Produce basic form drawings that accurately reflect the design concept • Use balance, proportion, highlights, shadowing, texturing effects appropriately	

	• Select technologies suitable for the manufacture of items • Undertake numerical operations, geometry and calculations within the scope of the unit	
3	**Manufacture of precious metal alloys**	**5**
	The individual needs to know and understand: • Content of precious metal alloys and the impact that additives have on the precious metal in terms of colour, pliability and durability • How alloys react to various processes used by the jewellery maker • Properties of precious metal alloys and their solders • Laws and regulations relating to precious metal content for sale and export • Assaying processes and procedures for the country of operation, purchase and sale of jewellery products • Assaying marks delineating precious metal quality • Formats in which precious metals are sold	
	The individual shall be able to: • Recognize authenticity and quality signs for precious metals • Source precious metals of the correct price and quality for jewellery manufacture • Calculate the proportions and quantities of fine precious metals and base metals required for any predetermined quantity of any recognized precious metal alloy • Cast precious metal alloy ingots and bars of any predetermined weight, with a minimum of residual impurities, ready to be milled or rolled in preparation for the manufacture of jewellery components	
4	**Preparation of precious metal alloys for the manufacture of jewellery components**	**10**
	The individual needs to know and understand: • Properties and applications of various recognized precious metal alloys • Procedures for transformation of precious metal alloy ingots in preparation for the manufacture of jewellery components • Applications and uses for various recognized precious metals	
	The individual shall be able to: • Manufacture precious metal sheet or square wire, and reduce to any pre-determined thickness using manual or electrically powered polling mills • Manufacture and reduce thickness of square or round wire in precious metal alloys to any pre-determined dimensions using drawing banks • Manufacture round wire from square wire, and reduce to any pre-determined diameter using a drawing bank	

5	**Manufacture of simple jewellery components**	**20**
	The individual needs to know and understand: • Various jewellery components and their uses • Techniques and methods for forming and constructing components	
	The individual shall be able to: • Manufacture Chenier/tube and reduce to any predetermined diameter using a drawing bank • Transform precious metal alloy sheet, wire or Chenier/tube into basic jewellery components by means of bending, shaping and forming so as to conform to any shape pre-determined by technical drawing or sample component • Accurately drill precious metals so as to conform to any shape pre-determined by technical drawings or sample component • Transform basic jewellery components by means of abrasive techniques such as milling, grinding, filing ajour-sawing etc. so as to conform to any shape pre-determined by a technical drawing or sample component • Hammer, emboss, shape or dome precious metal sheet of an appropriate thickness into low relief, so as to conform to any shape pre-determined by a technical drawing or sample component using an appropriate doming tool	
6	**Manufacture of complex components and complete jewellery pieces using solder joins**	**20**
	The individual needs to know and understand: • Various jewellery components and their uses • Range and use of techniques and methods for forming, constructing, and finishing components • Gemstone setting • Correct and safe use of solders and soldering torches	
	The individual shall be able to: • Assemble basic jewellery components into complex jewellery components by means of precious metal solder joins so as to conform to any design pre-determined by a technical drawing or sample component • Manufacture settings for precious gemstones so as to conform to any design pre-determined by a technical drawing or sample component, and so that stones of the pre-determined size and shape can be properly set by a professional gem setter • Manufacture functioning mechanisms for jewellery such as hinges, clasps, articulations, pressure snaps riveting and screw threads so as to conform to any design pre-determined by a technical drawing or sample component, or of their own conception and so that they will function as required and continue to function in the same way for an indefinite period of time with normal use • Assemble basic jewellery components and complex jewellery components into completed jewellery pieces by means of precious metal solder joins so as to conform to any design pre-determined by a technical drawing or sample component • Repair damaged or worn pieces of jewellery so that the restored piece will be indistinguishable from its original aspect at the time of manufacture	

7	**Surface finish**	**15**
	The individual needs to know and understand: • Skill specific finishing and polishing methods and techniques • Effect of different types and grades of polishing media on the surface finish • Procedures, tools and techniques to gain the optimum surface finish • Common surface imperfections and defects and appropriate techniques for their repair • International grades of sandpaper used in surface finishing	
	The individual shall be able to: • Avoid creating marks, scratches and surface imperfections throughout all stages of manufacture of simple and complex jewellery components and completed jewellery pieces prior to the application of final surface finish • Finish surfaces at stages throughout the manufacturing process • Apply non-reflective 800ASA sandpaper (or equivalent) appropriate for critical evaluation and/or passing on to any subsequent phase of production requiring other goldsmith's industry skills, such as casting, gem-setting, engraving, and polishing	
	Total	**100**

3 THE ASSESSMENT STRATEGY AND SPECIFICATION

3.1 GENERAL GUIDANCE

Assessment is governed by the WorldSkills Assessment Strategy. The Strategy establishes the principles and techniques to which WorldSkills assessment and marking must conform.

Expert assessment practice lies at the heart of the WorldSkills Competition. For this reason, it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the WorldSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the WorldSkills Competition falls into two broad types: measurement and judgement. For both types of assessment, the use of explicit benchmarks against which to assess each Aspect is essential to guarantee quality.

The Marking Scheme must follow the weightings within the Standards Specification. The Test Project is the assessment vehicle for the skill competition, and also follows the Standards Specification. The CIS enables the timely and accurate recording of marks, and has expanding supportive capacity.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed and developed through an iterative process, to ensure that both together optimize their relationship with the Standards Specification and the Assessment Strategy. They will be submitted to WSI for approval together, in order to demonstrate their quality and conformity with the Standards Specification.

Prior to submission for approval to WSI, the Marking Scheme and Test Project will liaise with the WSI Skill Advisors in order to benefit from the capabilities of the CIS.

4 THE MARKING SCHEME

4.1 GENERAL GUIDANCE

This section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the WorldSkills Competition, in that it ties assessment to the standards that represent the skill. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards Specification.

By reflecting the weightings in the Standards Specification, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Standards Specification, if there is no practicable alternative.

The Marking Scheme and Test Project may be developed by one person, or several, or by all Experts. The detailed and final Marking Scheme and Test Project must be approved by the whole Expert Jury prior to submission for independent quality assurance. The exception to this process is for those skill competitions which use an independent designer for the development of the Marking Scheme and Test Project. Please see the Rules for further details.

Experts and independent designers are required to submit their Marking Schemes and Test Projects for comment and provisional approval well in advance of completion, in order to avoid disappointment or setbacks at a late stage. They are also advised to work with the CIS Team at this intermediate stage, in order to take full advantage of the possibilities of the CIS.

In all cases a draft Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition using the CIS standard spreadsheet or other agreed methods.

4.2 ASSESSMENT CRITERIA

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived in conjunction with the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards Specification; in others they may be totally different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme as a whole must reflect the weightings in the Standards Specification.

Assessment Criteria are created by the person(s) developing the Marking Scheme, who are free to define criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I). It is advisable not to specify either the Assessment Criteria, or the allocation of marks, or the assessment methods, within this Technical Description.

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria.

The marks allocated to each Criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each Aspect within that Assessment Criterion.

4.3 SUB CRITERIA

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a WorldSkills marking form. Each marking form (Sub Criterion) contains Aspects to be assessed and marked by measurement or judgement, or both measurement and judgement.

Each marking form (Sub Criterion) specified both the day on which it will be marked, and the identity of the marking team.

4.4 ASPECTS

Each Aspect defines, in detail, a single item to be assessed and marked together with the marks, or instructions for how the marks are to be awarded. Aspects are assessed either by measurement or judgement.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it.

The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the skill in the Standards Specification. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4.1)

		CRITERIA								TOTAL MARKS PER SECTION	WSSS MARKS PER SECTION	VARIANCE
		A	B	C	D	E	F	G	H			
STANDARDS SPECIFICATION SECTION	1	5.00								5.00	5.00	0.00
	2		2.00					7.50		9.50	10.00	0.50
	3								11.00	11.00	10.00	1.00
	4			5.00						5.00	5.00	0.00
	5				10.00	10.00	10.00			30.00	30.00	0.00
	6										25.00	0.50
	7			10.00				5.00		15.00	15.00	0.00
TOTAL MARKS		5.00	10.00	20.00	10.00	10.00	10.00	15.00	20.00	100.00	100.00	2.00

4.5 ASSESSMENT AND MARKING

There is to be one marking team for each Sub Criterion, whether it is assessed and marked by judgement, measurement, or both. The same marking team must assess and mark all competitors, in all circumstances. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (See 4.6.)

4.6 ASSESSMENT AND MARKING USING JUDGEMENT

Judgement uses a scale of 0-3. To apply the scale with rigour and consistency, judgement must be conducted using:

- benchmarks (criteria) for detailed guidance for each Aspect (in words, images, artefacts or separate guidance notes)
- the 0-3 scale to indicate:
  - 0: performance below industry standard
  - 1: performance meets industry standard
  - 2: performance meets and, in specific respects, exceeds industry standard
  - 3: performance wholly exceeds industry standard and is judged as excellent

Three Experts will judge each Aspect, with a fourth to coordinate the marking and acting as a judge to prevent compatriot marking.

4.7 ASSESSMENT AND MARKING USING MEASUREMENT

Three Experts will be used to assess each aspect. Unless otherwise stated only the maximum mark or zero will be awarded. Where they are used, the benchmarks for awarding partial marks will be clearly defined within the Aspect.

4.8 THE USE OF MEASUREMENT AND JUDGEMENT

Decisions regarding the selection of criteria and assessment methods will be made during the design of the competition through the Marking Scheme and Test Project.

4.9 COMPLETION OF SKILL ASSESSMENT SPECIFICATION

Criterion A

For similarity to drawing, the Experts will assess the degree to which the Competitor's work reflects the general shapes and proportions described in the Test Project drawing(s). For function, the Experts will assess the degree to which any mechanisms or clasps in the Competitor's work function correctly.

Criterion B

The Experts will assess, shape's dimensions and internal surface finish of technical elements involving removal of metal in the Competitor's work.

Criterion C: The Experts will assess the degree to which Competitors unite, by means of solder joints, components implicitly or specifically defined as touching in the Test Project drawing(s), and creative design sketch without discoloration or incorrect application of solder.

Criterion D

The Experts will assess the degree to which the Competitor's work demonstrates a uniform, unpolished finish (equivalent to ASA 800 abrasive finish. A 20mm square flat sample piece of 18kt gold will be selected by the Experts and displayed in the workshop area to clearly show the desired surface finish) without marks, scratches or discoloration on all surfaces not assessed for criterion B.

Criterion E

The Experts will assess whether the measurements of the Competitor's work reflects clearly marked dimensions on the Test Project drawing, within defined tolerances. Experts will assess whether the mass of the competitor's work reflects clearly marked weights on the test project drawing. All dimensional marking will be inputted through the use of calculations and incremental percentage tolerances as agreed upon by the experts.

Criterion F

The Experts will assess whether the correct number of components and technical elements specified in the Test Project drawing(s) are present and connected to the others by means of at least one solder or mechanical joint, as specified in the technical project

Criterion G

The Experts will assess how well the Competitor has interpreted the design brief, taking into consideration level of creative difficulty i.e. is the design a simple or complex creation , use of technical skills to execute the design, level of intricacy i.e. is the piece a simple flat design, or does it consist of multiple components with form and layering, relevance to current trends, similarity to hand drawn sketch.

4.10 SKILL ASSESSMENT PROCEDURES

- The Experts that attend the Competition will be divided into marking groups to deal with each section of the marking criteria;
- Experts will maintain supervision of the Competitors during the Competition, but must not look at Competitors' work, or have any knowledge of progress except from the compatriot Competitor during those times permitted by Competition Rules, until the module is marked;
- At the end of each day of the Competition, the incomplete test pieces shall be collected, by the Workshop Manager, in opaque boxes, sealed and signed, marked with the Competitor's workstation number and country code, and locked in a safe or strong cabinet. The key or combination to the safe or strong cabinet should be kept only by a neutral person, nominated by the Experts;
- At the end of each day of the Competition, photographs may be taken of all Competitors' metal, by a neutral person nominated by the Experts, to assure that no parts may be replaced or added. These photographs shall be kept in a safe or strong cabinet;
- At the end of each Competition module the test pieces for marking shall be sealed in opaque envelopes, inscribed with the Competitor's name, workstation number and country code, until assessment or returned to the Competitor for use in a subsequent module.

5% MEASUREMENT CALCULATIONS EXAMPLE

Nominal dimension: 10.00
Maximum marks: 1.00

TOLERANCE STEP NUMBER	UPPER LIMIT	LOWER LIMIT	MARKS
1	10.05	9.95	1.00
2	10.10	9.90	0.9
3	10.15	9.85	0.8
4	10.20	9.80	0.7
5	10.25	9.75	0.6
6	10.30	9.70	0.5
7	10.35	9.65	0.4
8	10.40	9.60	0.3
9	10.45	9.55	0.2
10	10.50	9.50	0.1

3% MASS CALCULATION EXAMPLE

Design weight (g): 19.53

Aspect Mark (%): 2.00

Weight increments (%): 3.00

MAXIMUM WEIGHT RANGE (G)		MARK (%)	WEIGHT VARIANCE (G)
18.94	20.12	2.00	0.59
18.36	20.70	1.80	1.17
17.77	21.29	1.60	1.76
17.19	21.87	1.40	2.34
16.60	22.46	1.20	2.93
16.01	23.05	1.00	3.52
15.43	23.63	0.80	4.10
14.84	24.22	0.60	4.69
14.26	24.80	0.40	5.27
13.67	25.39	0.20	5.86
13.09	25.97	0.00	6.44

5 THE TEST PROJECT

5.1 GENERAL NOTES

Sections 3 and 4 govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the skills in each section of the WSSS.

The purpose of the Test Project is to provide full, balanced and authentic opportunities for assessment and marking across the Standards Specification, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme and Standards Specification will be a key indicator of quality, as will be its relationship with actual work performance.

The Test Project will not cover areas outside the Standards Specification, or affect the balance of marks within the Standards Specification other than in the circumstances indicated by Section 2.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work.

The Test Project will not assess knowledge of WorldSkills rules and regulations.

This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standards Specification. Section 2.1 refers.

5.2 FORMAT/STRUCTURE OF THE TEST PROJECT

Test Project with separately assessed sub-projects or components.

5.3 TEST PROJECT DESIGN REQUIREMENTS

The Test Project must have a wide variety of jewellery technical elements including:

- Ajour/backholes;
- Gallery and/or back/edge wire;
- Settings made by soldering simple jewellery components;
- Assembly of complex jewellery components;
- Doming/forming or relief work.
- A creative element that forms part of one day's module, that will be outlined by a creative brief supplied to the Competitor during familiarization.

The drawing must be available in at least JPG or PDF. For drawing projections refer to ISO 128, either first or third angle projection. Projections shall be on one sheet of A4 paper, scale 1:1, or one per module. Cross-sections and three-dimensional representations may also be included.

A 3D digital model of the Test Project modules will be available for consultation when presented to Experts.

Documentation for the test project proposal must include a full marking scheme.

It must be possible for Test Project proposals to be manufactured from the following pre-determined list of materials without having to melt and re-cast cuttings or filings:

- 40 mm x 80 mm x 1.2 mm sheet;
- 40 mm x 4.0 mm square wire;
- 100 x 2.0 mm round wire;
- 80 x 3.0 mm round-tube;
- 1 gm each of Hard/medium/easy solder.

In each module a minimum of three proposed marking dimensions, must be clearly identified on the drawing for marking purposes.

Full-size, hand-made prototypes of the selected Test Projects must be brought to the competition as for consultation by Experts.

Project must be designed to accommodate the timetable listed below:

- Module one: 3-5 working hours;
- Module Two: 5-7 working hours;
- Module Three: 5-7 working hours;
- Module Four: 4-6 working hours.

5.4 TEST PROJECT DEVELOPMENT

The Test Project MUST be submitted using the templates provided by WorldSkills International (www.worldskills.org/expertcentre). Use the Word template for text documents and DWG template for drawings.

5.4.1 Who develops the Test Project or modules

The Test Project is developed by an Independent Designer as per section B.7.4.3 of Competition Rules.

5.4.2 How and where is the Test Project or modules developed

See section B.7.4.3 of Competition Rules.

5.4.3 When is the Test Project developed

The Test Project is presented to the Experts on C-4.

5.5 TEST PROJECT VALIDATION

The Test Project is validated by the Skill Competition Manager.

5.6 TEST PROJECT SELECTION

Not applicable.

5.7 TEST PROJECT CIRCULATION

The Test Project is circulated via the website as follows:

Not applicable.

5.8 TEST PROJECT COORDINATION (PREPARATION FOR COMPETITION)

The Test Project development is coordinated by the Skill Competition Manager.

5.9 TEST PROJECT CHANGE AT THE COMPETITION

Not applicable.

5.10 MATERIAL OR MANUFACTURER SPECIFICATIONS

Specific material and/or manufacturer specifications required to allow the Competitor to complete the Test Project will be supplied by the Competition Organizer and are available from www.worldskills.org/infrastructure located in the Expert Centre.

6 SKILL MANAGEMENT AND COMMUNICATION

6.1 DISCUSSION FORUM

Prior to the Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the skill specific Discussion Forum (http://forums.worldskills.org). Skill related decisions and communication are only valid if they take place on the forum. The Skill Competition Manager (or an Expert nominated by the Skill Competition Manager) will be the moderator for this Forum. Refer to Competition Rules for the timeline of communication and competition development requirements.

6.2 COMPETITOR INFORMATION

All information for registered Competitors is available from the Competitor Centre (www.worldskills.org/competitorcentre).

This information includes:

- Competition Rules
- Technical Descriptions
- Marking Schemes
- Test Projects
- Infrastructure List
- WorldSkills Health, Safety, and Environment Policy and Regulations
- Other Competition-related information

6.3 TEST PROJECTS [AND MARKING SCHEMES]

Circulated Test Projects will be available from www.worldskills.org/testprojects and the Competitor Centre (www.worldskills.org/competitorcentre).

6.4 DAY-TO-DAY MANAGEMENT

The day-to-day management of the skill during the Competition is defined in the Skill Management Plan that is created by the Skill Management Team led by the Skill Competition Manager. The Skill Management Team comprises the Skill Competition Manager, Chief Expert, and Deputy Chief Expert. The Skill Management Plan is progressively developed in the eight months prior to the Competition and finalized at the Competition by agreement of the Experts. The Skill Management Plan can be viewed in the Expert Centre (www.worldskills.org/expertcentre).

7 SKILL-SPECIFIC SAFETY REQUIREMENTS

Refer to Host country or region WorldSkills Health, Safety, and Environment Policy and Regulations for Host country or region regulations.

- Competitors must wear transparent eye protection when required;
- Practical clothing that covers the body to knee e.g. Apron or coveralls;
- Enclosed footwear must be worn within the workshop area;
- Ear plugs or ear protection must be worn when required.

8 MATERIALS AND EQUIPMENT

8.1 INFRASTRUCTURE LIST

The Infrastructure List details all equipment, materials and facilities provided by the Competition Organizer.

The Infrastructure List is available at www.worldskills.org/infrastructure.

The Infrastructure List specifies the items and quantities requested by the Skill Competition Manager on behalf of the Experts for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Items supplied by the Competition Organizer are shown in a separate column.

At each Competition, the Skill Competition Manager must review, audit, and update the Infrastructure List in partnership with the Technical Observer in preparation for the next Competition. The Skill Competition Manager must advise the Director of Skills Competitions of any requests for increases in space and/or equipment.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

8.2 COMPETITOR'S TOOLBOX

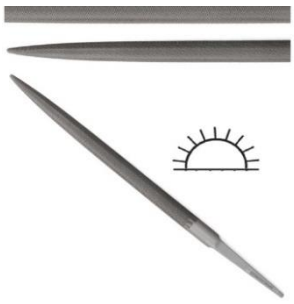
Toolboxes greater than 0.10 m³ (including outer packaging) will not be allowed within the workshop area during the competition.

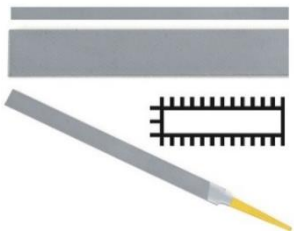
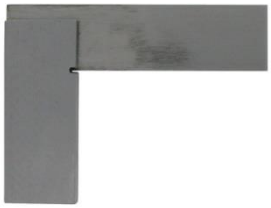
The volume will be measured as height (Floor to top of toolbox) x width x depth.

Wheels can be removed.

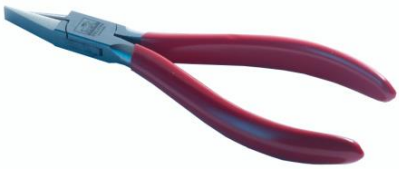
8.3 MATERIALS, EQUIPMENT, AND TOOLS SUPPLIED BY COMPETITORS IN THEIR TOOLBOX

Non-consumable materials, equipment, and tools to be supplied by the Competitor

DESCRIPTION	QUANTITY	PHOTO
Saw frames	2	
Needle File Cut 2	1	
Needle File Cut 0	1	
Half round ring file	3	
Crossing File	2	

DESCRIPTION	QUANTITY	PHOTO
Bench File	2	
Dividers	2	
Square	1	
Scriber	1	
Centre Punch – automatic or static	1	
Scissor for metal	2	

DESCRIPTION	QUANTITY	PHOTO
Tweezers Stainless Steel Anti-magnetic (set of three)	2	
Tweezers - Titanium X-Lock – Curved (1 set of 4)	1	
Titanium Rod for Soldering	2	
Stand for pliers	1	
Parallel plier	2	
Cutter - End cut flush or Side cut	2	

DESCRIPTION	QUANTITY	PHOTO
Plier curved chain	2	
Plier flat	2	
Plier Flat/Round	2	
Chain Nose Plier	2	
Graver Flat Taper with handle	2	
Graver Onglette with handle	2	

DESCRIPTION	QUANTITY	PHOTO
Flat Graver with handle	2	
Clamp – double end, broad wedge	2	
Bench hammers	2	
Nylon plastic mallet	2	
Mallet wood/raw hide	2	
Optivisor head loupe	1	

DESCRIPTION	QUANTITY	PHOTO
Glue	1	
Steel ruler	2	
Magnet	1	
Bench Anvil	1	
Small bench vice 60mm jaw width	1	

- Please note that images and descriptions of equipment listed above are a guide only of the type of tool ,and quantity of that type, that can be brought by competitors. Equipment that is supplied by the Competition Organizer (listed in the IL) must be used by all Competitors; i.e. Competitors cannot bring their own alternative tools with the same functionality as they will not be allowed in the workshop. Refer to Competition Rules.
- Competitors may choose to bring alternative tools to those listed above, but must ensure that all tools brought to the Competition fit within the pre-define toolbox size as listed in section 8.2 COMPETITORS TOOLBOX

NOTE:

- Whitening pickle and pickle vat will be supplied by the Competition Organizer and listed in the Infrastructure List. Competitors are not to use any other acid/pickle than that supplied. The brand and materials safety data sheet for the pickle will be made available six months before the Competition.

8.4 MATERIALS, EQUIPMENT, AND TOOLS SUPPLIED BY EXPERTS

Not applicable.

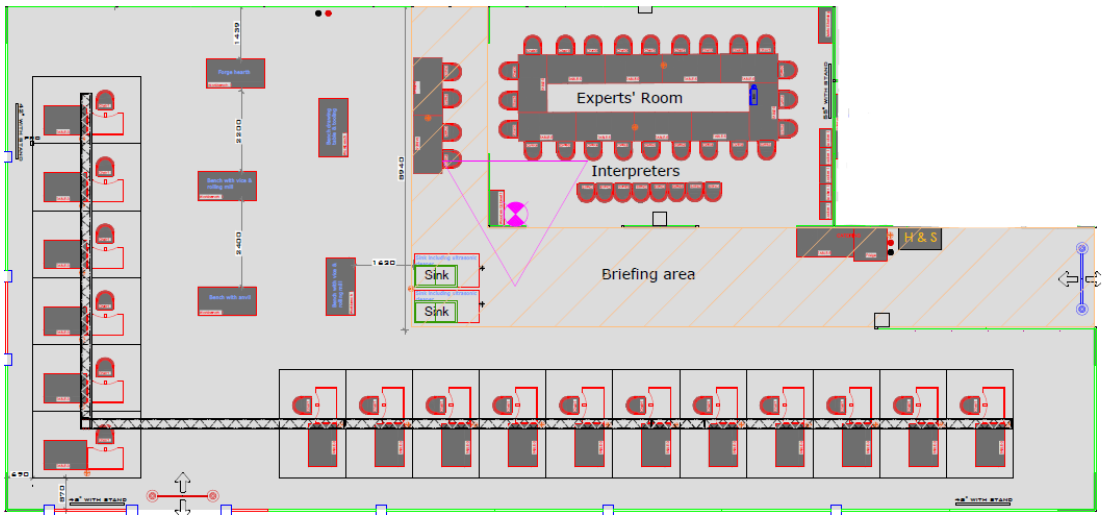
8.5 MATERIALS AND EQUIPMENT PROHIBITED IN THE SKILL AREA

- Material used in the Test Project: other than that supplied by the Competition Organizer for the competition.
- Any yellow or white gold or silver;
- Tools with the same functionality as equipment that is supplied by the Competition Organizer (listed in the IL). As outlined in section

8.6 PROPOSED WORKSHOP AND WORKSTATION LAYOUTS

Workshop layouts from previous competitions are available at www.worldskills.org/sitelayout.

Example workshop layout:



9 SKILL-SPECIFIC RULES

Skill-specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from skill competition to skill competition. This includes but is not limited to personal IT equipment, data storage devices, internet access, procedures and work flow, and documentation management and distribution.

TOPIC/TASK	SKILL-SPECIFIC RULE
Use of technology – USB, memory sticks	• Use of digital information storage devices on any computer on which the final Test Project is stored.
Use of technology – personal laptops, tablets and mobile phones	No digital information processing devices of any kind may be taken to the workstations, including: • Computers • Tablets • Mobile phones • Personal stereo equipment
Use of technology – personal photo and video taking devices	The following uses of photographic devices are forbidden: • Taking photographs of any Test Project documentation, • Taking photographic devices into the work-stations between setting-up and packing-up. • Taking detailed photographs of Competitor's work from outside the workshop. • Viewing detailed photographs of Competitor's work from outside the workshop taken by others. • Refer to section 4.9 of WSC2019_TD27_EN
Tools/infrastructure	The following tools/infrastructure must not be used, or brought into the workshop area (Refer to section 8.5 of WSC2019_TD27_EN): • Metal used in the Test Project other than that supplied by the Host Country for the competition. • Any yellow or white gold or silver that can be used to augment the metal supplied for the competition. • Unused tools/infrastructure found/handed in at/before the initial toolbox check will be confiscated until after the competition. • Tools with the same functionality as equipment that is supplied by the Competition Organizer (listed in the IL). As outlined in section
Templates, aids, etc.	Competitors must not bring the following into the workshop (Refer to section 8.5 of WSC2019_TD27_EN): • Tools/templates pre-formed for the Test Project; Any such tools/templates must be manufactured during competition time

Drawings, recording information	• With the exception of the Competition Timetable, all documentation that is taken to (or produced at) the workshop, must remain in the workshop. • All Competitor documents, including notes and sketches must remain at the Competitors workstation, and within the competition area. • All Experts documents, including notes and sketches, must remain within the Experts area. • Experts and Interpreters may not directly exchange documents with Competitors within the workshop (translations of documents for Competitors must be copied by the SMT before being passed on)
Equipment failure	• In the event of failure of equipment supplied by the Competition Organizer, time lost during repair or substitution will be added on to the official competition time. • In the event of failure of equipment brought by the Competitor, time lost during repair or substitution will not be added on to the official competition time. • Refer to section 8 of WSC2019_TD27_EN
Health, Safety, and Environment	• Refer to the WorldSkills Health, Safety, and Environment policy and guidelines document.
Sustainability	• Toolboxes greater than 0.10 m^3 will not be allowed within the workshop area during the competition. The volume will be measured as height (floor to top of toolbox, wheels can be removed) x width x depth. (Refer to section 8.2 of WSC2019_TD27_EN): • All precious metal filings must be gathered in the bench draw or lap-skin and collected at the end of each competition day. • All lighting and power must be turned off at the power point outside of competition time • All gas and oxygen cylinders must be turned to the off position outside of competition time

Assessment	Experts will maintain supervision of the Competitors during the competition, but must not look at Competitors' work, or have any knowledge of progress, except from those times permitted by Competition Rules, until the module is marked (Refer to section). The following rules must therefore be observed. during competition time: • Experts and Interpreters must not enter the safety area between setting-up and packing-up, except during daily toolbox checks. • Must not have direct contact with their compatriot Competitor during competition time except during those times permitted by Competition Rules. • Must not leave the workshop for breaks if their compatriot Competitor is also outside except during those times permitted by the Competition Rules. During competition time, Competitors: • Who require assistance should speak to the CE (with or without Interpreter) at a predetermined "neutral" location on the edge of the safety area. • Must not have direct contact with their compatriot Expert/Interpreter (including breaks) except during those times permitted by Competition Rules. • Must not leave the workshop for breaks if their compatriot Expert/Interpreter is also outside except during those times permitted by the Competition Rules. • Any exceptions to above, or alternative solutions must be approved by CE.
Test Project	• No digital or paper copy (see above) of the Test Project is to be given to Competitors, other than the official Test Project documents provided at the beginning of Competition Day one.

10 VISITOR AND MEDIA ENGAGEMENT

To maximize visitor and media engagement for Jewellery the following ideas will be considered:

- Try a trade (benches with tools for visitors to try basic Jewellery techniques);
- "Competitor Cam" – a fixed camera on each Competitor's workstation with a central viewing monitor;
- Test Project descriptions;
- Enhanced understanding of Competitor activity;
- Competitor profiles – interests, training and education, e.g. duration of training;
- Career opportunities – may differ for each Member country;
- Precious metal art history – an educational brochure detailing the history of jewellery manufacture and how this aligns with current industry practice, in particular, techniques that the Competitors are currently using;
- Audio visual display explaining the project and category information for the general public.

11 SUSTAINABILITY

This skill competition will focus on the sustainable practices below:

- Recycling;
- Use of 'green' materials;
- Use of completed Test Projects after Competition;
- Energy efficient lighting;
- Pre-determined material list;
- Pre-determined toolbox sizes.

12 REFERENCES FOR INDUSTRY CONSULTATION

WorldSkills is committed to ensuring that the WorldSkills Standards Specifications fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Standards Specification on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (http://www.ilo.org/public/english/bureau/stat/isco/isco08/)
- ESCO: (https://ec.europa.eu/esco/portal/home)
- O*NET OnLine (www.**oneto**nline.org/)

This WSSS (Section 2) appears most closely to relate to the occupation of *Jeweller* (which is rather higher): https://www.onetonline.org/link/summary/51-9071.01

And the occupation of *Jeweller* here, which may be a closer fit:
http://data.europa.eu/esco/occupation/618a854a-4ecd-4535-84e6-350e1fe0aa0f

Adjacent occupations may also be explored through these links.

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Standards Specification in place for WorldSkills Kazan 2019.

ORGANIZATION	CONTACT NAME
Jewellers Association of Australia	Megan Young, Membership and Marketing
Indian Association of Gems and Jewellery, Jaipur	Professor Dhiraj Kumar, Princpal
LCC: Sharonov's Academy of Jewellery Arts (Russia)	Diana Tabachkova, Chief Executive Officer
C Rempel Joias Ltda (Brazil)	Claudinei Rempel, Manager
Pallion PTY LTD (Asia and Oceania)	Andrew Cochineas, Chief Executive Officer

13 APPENDIX

Sample technical drawings