

**VIRU KEEMIA GRUPP AS**



KINNITAN

*(allkirjastatud digitaalselt)*

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Juhatuse esimees  
veebbruar 2013

*(allkirjastatud digitaalselt)*

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veebbruar 2013

**Hot Works Safety Management**

Instruction No. 136

**1. General provisions**

- 1.1. This Instruction establishes the requirements to handling of hot work operations in Viru Keemia Grupp AS and in the affiliates thereof (hereinafter the Concern).
- 1.2. The Instruction is inclusive of the following annexes and forms:  
Form 1 Hot Work Permit
- 1.3. With this Instruction coming in force, the former Instruction No. Hot Works Safety Management, approved by Administrative Order No 3 as of 12.01.2005 of the Chairman of the Board of Viru Keemia Grupp AS, shall be considered ineffective.
- 1.4. In case of necessity, an affiliate will develop a separate instruction or annex to this Instruction, making the procedure of hot work operations more precise in application to the particular work environment of the business entity, which is subject to approval by a Board member. Safety requirements stated in the aforesaid instruction shall not be at variance with the requirements stated in the Instruction, and shall be not lower than those stated in the Instruction.
- 1.5. The requirements stated in the Instruction are applicable both to hot work operations executed by subdivisions of affiliates, and to works executed by contractor organizations.
- 1.6. Hot work operations include:
  - gas-welding operations;
  - arc-welding operations;
  - cutting of metal with a flammable liquid;
  - cutting of metal with a disk cutter;
  - heating and use of bitumen and other inflammable mastic;
  - using gas flame;
  - using a fire pit or starting up a fire outside a fire pit;
  - other activity, in the course of which flame is used, or one resulting in sparks formation or in the temperature which may cause the ignition of surrounding inflammable materials bringing about real danger of fire.

- 1.7. Hot work operations shall be executed only in places, wherein possible fire- and explosion hazards are accounted for and measures are taken to avoid such hazards.
- 1.8. The right to executing hot work activities (with the exception of using a fire pit or starting a fire outside a fire pit) in the Concern is given to an employee (an employee of an external organization, inter alia), who:
- has a professional certificate or received training in carrying out a hot work operation and
  - has a valid hot work operator's certificate.
- 1.9. Places for executing hot work are subdivided into fixed and temporary.
- 1.10. **Fixed place for executing hot work operations** (hereinafter fixed place) – is a place, specially designed or adapted for carrying out hot work, which with its boundaries is separated and protected from the adjacent enclosed space, structure or land site, so that it is possible to carry out hot work operations in a safe way, and there is no possibility for the flame to spread outside the hot work zone of the fixed hot work place.
- 1.11. For each affiliate, fixed hot work places shall be approved by an Administrative Order of the Board member.
- 1.12. A fixed place shall meet the following requirements:
- structures and fencing of a hot work place shall be manufactured of fire resistant material or be protected against ignition;
  - finishing of the hot work place shall be of fireproof material;
  - no flammable or combustible materials shall be stored or handled at the hot work place;
  - the hot work place shall be fire-resistant and isolated from the room, wherein flammable or combustible materials are stored or activity is carried out, which may result in fire- or explosion hazard;
  - fixed hot work place shall be furnished with a caution plate with the designation of the working site and the name of the person responsible for hot work operations.
- 1.13. **Temporary place for executing hot work operations** (hereinafter temporary place) is a place that does not meet the requirements attributed to the fixed hot work place, wherein, however, measures are taken to avoid ignition of flammable and combustible materials. To avoid ignition of inflammable materials, the temporary place is to be prepared in compliance with the requirements stated in Clause 3 of the Instruction.
- 1.14. If possible, hot work operations are to be carried out at the fixed hot work place. In case hot work cannot be executed at the fixed place, it is allowed to use a temporary hot work place for this purpose.
- 1.15. At a temporary hot work place it is necessary to eliminate possibility of open flames spreading or ingress of sparks outside the zone of hot work operations and/or below the elevation mark of the working zone (See Table No. 1). It is necessary to safeguard the places of heat work operations with auxiliary aids of fire resistant material and to establish the supervision over hot work activities.

**Table No. 1.** Minimum radius for the zone to be cleaned of flammable and combustible materials

Height of hot work point over the floor level or adjacent area, m	0	2	3	4	6	8	10	More than 10
Radius of the zone, m	5	8	9	10	11	12	13	14

- 1.16. Hot work operations shall be immediately stopped upon the demand of the Customer's representative (chief operator among them), working environment specialist and a security guard of Viru Keemia Grupp AS, if at implementation of works requirements for performance of the fire works, established by the legislation or the present Instruction are violated.

## 2. Hot work permit

- 2.1. Hot work operations can be carried out only on the availability of the duly issued Hot **Work Permit** (hereinafter the Permit). The Permit for hot work operations shall be issued by the Customer (Viru Keemia Grupp AS and its affiliates) in compliance with these Guidelines or with the instruction, separately developed by the business entity, wherein hot work operations will be carried out.
- 2.2. For fixed hot work places the Permit (Form No. 1) is issued with the period of validity of one calendar year.
- 2.3. For temporary hot work place a Permit (Form No. 1) is also issued, which will be valid within the whole period necessary for executing the amount of work stated therein. Should the scope of work be not completed within the stipulated period, the Permit can be prolonged by filling in i. 15 of the Permit.

Each affiliate shall define the necessity of daily prolongation of temporary Permits, with this fact to be specified in a separate instruction or in an annex to these Guidelines.

- 2.4. For hot work operations to be executed outside the territory of Viru Keemia Grupp AS and its affiliates, no Permit in writing is required. Hot work operations shall be executed in accordance with the requirements stated in the Minister's of the Interior Regulation № 47 Hot Work Safety Requirements as of September 7, 2010 as well as in the instructions of Viru Keemia Grupp AS, stated in Clause 5.6. of the Instruction.
- 2.5. The Permit shall be accompanied by the scheme of the hot work place.
- 2.6. Should hot works be executed on process vessels or process communications, the Permit shall be supplemented with the scheme, wherein the method of cleaning and gas removal are indicated along with points of steam supply for steaming operations, points of condensate removal, points for sampling of air medium for determining the explosion safety, as well as the location of blinds aimed at shutting off from active pipelines and vessels.  
The scheme shall be signed by the head of structural subdivision.
- 2.7. On issuing the Permit for hot work activities to be carried out inside tanks, vessels, sumps, manifolds etc., all safety measures, which are envisaged in the Instruction and in Instruction No. 101 «On the routine of executing gas dangerous work», shall be accounted for and a **Job Order for Gas Dangerous Works** shall be also issued.
- 2.8. The head of structural subdivision or his designated substitute shall nominate individuals responsible for preparation and execution of hot work operations, as well as to define the scope and content of preparation jobs, sequence of their performance, the routine for monitoring the air medium, safety measures on hot work activities, which is certified by his signature in i.8 of the Permit.
- 2.9. It is only the Customer's engineering staff worker, who can be appointed the person in charge for preparation for hot work operations.
- 2.10. Individuals, responsible for the execution of hot work operations can be appointed from both the Customer's personnel and the personnel of an External organization (should hot work operations be carried out by External organizations).
- 2.11. Content of the team, involved in the execution of hot work activities, and the numbers of their hot work operator's certificates shall be entered in i.10 of the Permit.

- 2.12. After all activities envisaged by the Permit have been completed individuals responsible for the preparation and execution of hot work operations put their signatures in ii. 12 and 13, respectively, following which the head of the structural subdivision will control the completeness of execution, certifying this with his signature in i. 14. (stating the date and time) of the Permit.
- 2.13. The permit shall be issued in two copies. If any corrections or crossing of entries are done, these shall be certified with the signature of the person, who introduced the alterations. If it is necessary to change the type of work, to increase the amount of work or to enlarge the working area, a new Permit shall be issued.
- 2.14. In case of necessity, the head of the structural subdivision shall coordinate the Permit with the head of the structural subdivision of the affiliate, on whose territory hot work activities are going to be carried out, as well as with interrelated structural subdivisions and with the Customer's working environment specialist.
- 2.15. The working environment specialist will register the coordinated Permit and assign the registration number.
- 2.16. One copy of the Permit is retained by the Hot Work Operator, with the second copy retained by the working environment specialist.
- 2.17. Should hot work activities be performed by several people, the Permit shall be with the senior worker, appointed the hot work manager.
- 2.18. Implementation of fire works in the concern territory without the issued Hot Work Permit is forbidden.
- 2.19. The Performer of fire works and the person which has allowed it to work from the Customer bear responsibility for performance of fire works without the issued Hot Work Permit to territories of concern.

### 3. Preparatory works

- 3.1 Preparatory works involve all types of works relative to the preparation of place, equipment and communications for hot work activities to be carried out, as well as the pre-job briefing delivered to the workers directed for carrying out the hot work activities.
- 3.2 Preparation of the place for the planned hot work activities shall be carried out by the personnel of the Customer's structural subdivision under the guidance of the person responsible for the hot work preparation.
- 3.3 Prior to starting the hot work activities, the person responsible for preparatory works shall instruct the hot work operators and the person responsible for hot work operations about the specific aspects of explosion- and fire hazard of the site. The fact of the pre-job briefing shall be fixed in the Permit by the signatures of the operators and the person responsible for the hot work activities.
- 3.4 Vessels, tanks, piping systems and other equipment, on which the hot work operations are going to be executed, shall be put out of operation, emptied of explosion-, fire-hazardous or toxic products, shut off from active vessels and communications with blinds (which shall be fixed in the log of mounting and dismounting of blinds) and prepared for the hot work operations in accordance with the fire safety regulations and instructions on the preparation of equipment for repair works.

Should there be no possibility to mount a blind, a hot work plan is to be developed, which will form an annex to the Permit.

- 3.5 Within the radius of 5 m, the place of hot work operations shall be cleaned of combustible materials or covered with fire retardant material. Platforms, metal structures, structural elements of galleries etc., located within the hot work zone, shall be cleaned of explosion hazardous products (dust, shale oil, oils, etc.)
- 3.6 Structures and fencing made of flammable or combustible materials located at a distance of less than 5 meters shall be covered against ignition or wetted down with water and also are supported damp during the whole time of performance of work.
- 3.7 No hot work operations in closed spaces, boilers, tank cars, tanks, pipelines etc. shall be allowed without the preliminary analysis of air medium for combustible and explosion hazardous gases and vapours.
- 3.8 Drain hubs/funnels, boiler outlets and other devices that are connected with the sewage system and may contain combustible gases and vapours shall be shut off. During hot work activities special measures shall be taken in the vicinity of such places: within the radius of 10 m from the hot work place, sewer manholes shall be covered with fire retardant material and with a layer of sand of minimum 10 cm atop.
- 3.9 Measures shall be taken at the hot work place to eliminate scattering of sparks.
- 3.10 Hot work places shall be provided with fire extinguishing means, **no less than 2 fire extinguishers charged with minimum 6 kg** of a fire extinguishing substance, and with water or steam supplied in case of necessity.
- For roofing jobs associated with heating of bitumen or other combustible material, besides two 6 kg fire extinguishers there should be **no less than 2 fire extinguishers charged with minimum 6 kg of fire extinguishing substance** or one fire extinguisher charged with 12 kg of fire extinguishing substance.
- The location of the fire extinguishing means shall be no more than in 10 m from the hot work place and they should be in a ready-to-use condition.
- 3.11 At the temporary hot work places it is allowed to substitute fire extinguishers for fire hose system. Before the hot work have started, it is necessary to lay the fire hose equipped with the nozzle to the hot work place. The system shall be in a ready-to-fire extinguishing condition. It is allowed to use water instead of fire extinguishers, if the fire hazardous material located in this place can be extinguished with water.

#### 4. Execution of hot work operations

- 4.1 For the execution of hot work operation a responsible person is appointed from the engineering staff of the structural subdivision, who knows the specific aspects of fire- and explosion hazard for the particular working site and has passed the check of his competence in occupational safety.
- 4.2 Should hot work activities be executed by the External organization's personnel, a responsible person can be appointed a leading employee from the organization's engineering staff, who is familiar with the hot work safety requirements and who has been instructed on the matter of explosion- and fire hazard aspects specific for the particular working site with the instruction taking place in the structural subdivision, wherein hot work activities are going to be executed. The fact of the pre-job briefing shall be fixed in the **«Briefing Log»** of the Customer's structural subdivision. In such a case all responsibility for the professional qualification of hot work operators, for hot work activities and for the supervision in the course of hot work operations lies on the External Company.
- 4.3 Execution of hot work operations during dark hours, weekends or public holidays is allowed provided the time schedule of hot work activities is stated in the Permit. The Permit shall bear information on the date and time of work, as well as on the necessity

- of continuous monitoring of compliance with the safety measures by the person responsible for hot work activities.
- 4.4 It is the Hot Work Operator who is responsible for executing hot work activities in compliance with the requirements stated in the Instruction.
- 4.5 Admission to performance of hot work activities will be executed by the person responsible for hot work activities after his taking-over the site equipment from the person responsible for hot work preparation and upon satisfactory conditions of the air medium.
- 4.6 The operators shall be entitled to start work only after getting permission from the person responsible for hot work activities.
- 4.7 Hot work activities can be started upon full absence of explosion- and fire hazardous substances in the air medium within the hazardous area, inside the vessel, tank, pipeline etc.
- 4.8 On carrying out hot work activities, it is forbidden:
- To admit to hot work activities the workers, who do not have permits for independent work and/or do not have qualification certificates (e.g. hot work operator's certificate ); Simultaneously with hot work operations to carry out other activities, in the course of which flammable liquid or combustible gas are used and which may result in the fire- or explosion hazardous situation;
  - For hot work operators to use uniform bearing stains of oil, grease, fat, petrol or other flammable liquids;
  - To use non-standard or technically faulty equipment;
  - To carry out welding or cutting of freshly painted structures;
  - To use open flames or any other fire hazardous method for heating hot work equipment or cylinders filled with a combustible gas (oxygen, propane, etc) used in the hot work operation;
  - To leave cylinders filled with a combustible gas in the vicinity of hot equipment or under direct sunlight during warm season;
  - To transport gas cylinders manually, to simultaneously transport oxygen cylinders and cylinders with combustible gases, except for simultaneous transporting of two cylinders on a specially intended cylinder trolley;
  - To allow electric wires to come in contact with compressed gas cylinders;
  - To allow using of non- or poorly insulated electric wires;
  - To carry out hot work operations on tanks, pipelines or other equipment
    - Filled with combustible materials or their residues;
    - Bearing non-flammable liquid, gas, steam or air, which are under pressure;
    - Which are under voltage.
- 4.9 During hot work operations, the metal part or item being processed shall be cooled down to avoid vigorous heating in case it creates a fire hazard through thermal conductivity or heat radiation
- 4.10 Vessels and tanks wherein electric welding is performed shall be earthed.
- 4.11 Should any content of combustible substances be detected within the hazardous zone, inside the vessel or the pipeline, hot work operations shall be immediately stopped. The operations can be resumed only after the causes of gas contamination have been eliminated and normal air medium has been restored.
- 4.12 In the course of hot work operations, the operators shall take measures to eliminate possibility for explosion- and fire hazardous substances to be released into air medium.

**It is forbidden:**

- To open hatches and covers of vessels;
- To unload, handle or drain products off;

- To make loading through open hatches
- As well as to carry out other operations that can result in fires or explosions caused by gas- and dust contamination of places of hot work activities.

4.13 Fragments of used electrodes shall be gathered into a special container/box.

4.14 During hot work activities the distance shall be:

- from the gas burner to cylinders with oxygen or combustible gas – no less than 10 m;
- between oxygen and gas cylinders – no less than 5 m.

4.15 Hot work operations shall be immediately stopped if there are identified any deviations from the requirements stated in the Instruction, non-compliance with safety measures, envisaged by the Permit, or if a hazardous situation occurs.

4.16 Supervision over the hot work place shall be carried out by the Operators within the whole period of hot work activities. Should hot work activities be accompanied by the danger of fire to occur in an adjacent enclosed space, on lower floors, or in any other places, these shall be also supervised. In i. 7 of the Permit, the Customer shall indicate the name, surname and position of the individual, who acts as a supervisor in the course of hot work activities and thereafter.

During hot work activities supervision shall be provided by the hot work operator or the individual responsible for hot work activities.

After hot work operations are finished, supervision is provided by the Customer's representative.

4.17 After hot work operations have been finished:

- The Operator makes careful examination and cleans the place, if necessary, wets it down with water, eliminates identified faults, which can result in a fire potential or in injuries or accidents;
- The head of structural subdivision shall provide continuous supervision over the place of hot work operations within no less than 2 hours until the risk of fire has stopped.

4.18 Every day after hot work operations are finished, the individual responsible for hot work activities informs the head of the structural subdivision of finishing the hot work operations.

Documents on the executed hot work operations shall be retained by the head of the structural subdivision during 1 month since the date of full completion of works.

## **5. Duties and responsibilities of heads in charge and operators**

5.1 The head of structural subdivision must:

- Develop measures on the preparation and safe execution of hot work operations and control their execution;
- Appoint individuals to be responsible for preparation and execution of hot work operations from among heads and experts, familiar with the conditions of preparation and rules of hot work activities on explosion hazardous and fire explosive working sites;
- Coordinate a permit with the superior management (if necessary), interrelated structural subdivisions (if necessary), and the working environment specialist;
- Prior to authorizing the execution of hot work operations at the facility, control execution of measures, fixed in the permit, and their correspondence to the labour- and fire safety requirements.
- Arrange supervision over the hot work place after the operations have been finished.

#### 5.2 Individual responsible for preparation of hot work place must:

- Organize execution of measures, fixed in the Permit;
- Control fullness and quality of execution of measures, envisaged in the permit;
- Control operators' possession of hot work operator's certificates;
- Provide timely carrying out of air medium analyses at the hot work place and in the hazardous zone;
- Deliver pre-job briefing to the individual responsible for hot work operations.

#### 5.3 Individual responsible for the execution of hot work job must:

- Organize execution of safety measures for hot work operations;
- Control correct functioning of tools and means used in hot work operations;
- Provide hot work place with primary fire extinguishing means, and operators – with personal protection equipment;
- Systematically (or if circumstances require - continuously) be present at hot work place, control the operators' work;
- Know status of the air medium at hot work place. In case of necessity, stop hot work operations;
- On resuming hot work activity after an interruption, control the condition of hot work place and equipment and give permission for the jobs only after receiving satisfactory analysis for air medium in the room and vessels;
- Organize supervision over hot work place during the work;
- Report daily to the head of the structural subdivision that has issued the Permit about the completion of hot work activities.

#### 5.4 Hot work operators must:

- Have with them professional qualification certificate along with the certificate acknowledging their right on executing hot work operations;
- Receive pre-job briefing on fire explosive peculiarities of the facility and put their signature in the Permit ;
- Familiarize themselves with the scope of work at the place of forthcoming work;
- Proceed to hot work operations only by the order of the individual responsible for hot work operations;
- Execute only the work, stated in the Permit;
- Comply with safety measures envisaged in the permit;
- Be able to use fire extinguishing means, and in case of fire immediately proceed with the extinction;
- Supervise the hot work place during the whole period of hot work operations and after their completion;
- Stop operations should a hazardous situation occur.

#### 5.5 Chief operator (shift foreman) must (in case the operations are carried out on the production site):

- Notify the shift personnel of hot work operations carried out onsite;
- Make provisions for running the technological process so that to avoid possibility of fire, explosion or injury of people working at the time of hot work operations;
- In the operator shift log make an entry on hot work operations taking place onsite;
- After completion of hot work operations, together with the individual responsible for hot work operations check the place of the operation to eliminate possibility of flame formation and make arrangements for the shift personnel to watch over the place with high potential of fire formation during no less than 2 hours.

#### 5.6 Gas and arc welders and persons, directly involved in hot work operations must strictly follow:

- Instruction №25 on labour safety on the use, storage and transportation of oxygen cylinders ;
- Instruction № 47 for arc welders;



- Instruction № 69 on occupational safety for gas welders, gas cutters and petrol cutters;
- Instruction No 136 Hot Works Safety Management.

## 6. Actions in case of accident

### 6.1 Actions in case of an accident and emergency situation occurred on the production site.

- In an emergency situation (fire, explosion or gas leak) immediately leave enclosed spaces or territory, strictly following the instructions of the operating personnel.
- In an emergency situation call at the national emergency number 112, having informed thereof the dispatcher: phone +372 334 2216 (17) or the department of interior guard: phone + 372 525 4900 and the individual responsible for hot work operations.
- In case of an injury of feeling unwell on the production site of VKG, the first aid may be received at the first-aid station (located in the gatehouse at the entrance to the production site).

## 7. Related documents

- 7.1 Instruction No.25 on labour safety on the use, storage and transportation of oxygen cylinders.
- 7.2 Instruction № 47 for arc welders.
- 7.3 Instruction № 69 on occupational safety for gas welders, gas cutters and petrol cutter operators.
- 7.4 Instruction № 101 on the routine of executing gas dangerous works.
- 7.5 Fire Safety Act (RTI, 31.05.2010, 24, 116), adopted on May 5, 2010 by the Parliament of the Republic of Estonia.
- 7.6 Resolution No. 47 by the Minister of the Interior as of September 7, 2010, Hot Work Safety Requirements

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Version	Brief description of changes (reference to sub-clauses)
1	First edition