

11.5 Check list for Post Insulation

11.5.2 isoplus - Assembling Conditions

for executing of insulation- and sealing works at district heating compound systems by AGFW-/BFW-approved and isoplus- factory educated assembling engineers

1. In order to assure a qualitative optimal and exact terminated post insulation, an announcement in advance of at least five working days and during the months July, August, September and October even eight working days have to be considered. The execution of the insulation and sealing works will last approximately as long as the time for the pipe laying- and welding works.

2. The exact terminated completion of the works will depend from the detailed information about the extent of the works. **isoplus** will be not responsible for exceeding of the agreed date of completion, due to not sufficient information.

3. The pipe layer will be exclusively responsible for providing of all required system accessories for post insulation works (PUR-foam, shrinkable sleeves, expansion pads etc.) as well as for a dry, frost-free and protected against direct sun irradiation storing in a lockable room or container. PUR-foam has to be stored at temperatures between + 15° C and + 25° C. The maximum storing period is 3 month.

4. In case of building ducts the delivered end- respectively shrinkable caps have to put on without any damage before the later welding works. During the welding works these parts have to be protected against heat and combustion. In case that this cannot be guaranteed, so called zip-end caps should be ordered and assembled. Standard end caps may not be cut off.

5. The completeness of all delivered accessories has to be checked and confirmed by the pipe layer at receipt of the material. Complaints will be accepted only within three days. Only the pipe layer will be responsible for any material which will disappear during the construction period.

6. The pipe layer will be generally responsible to drain the pipe trenches and to keep them free until the post insulation works will be completed, according to DIN 4033, section 5.3. The trenches have to be constructed according to the regulations of the Employer's Liability Insurance Association. The **isoplus**-laying guidelines have to be considered additionally.

The assembling progress as well as the quality of all required works, and therefore the expected lifetime of a district heating pipeline will essentially depend from a trench construction which will fulfill all regulations and guidelines.

7. PEHD-assembling fittings should be used only exceptionally, due to assembling technology reasons. These parts have to be checked and approved before using, by our technical departments concerning pipe-static. A production will be made only on written request. Sufficient construction space as well as a both side support should be available in order to produce assembling fittings at site.

8. For open line constructions the pipe layer has to install and to hold the required assembling scaffolds acc. to DIN 4420 free of charge, until completion of all laying- and post insulation works. The Employer's Liability Insurance Association regulations for prevention of accidents have to be considered.

9. Post insulation in manholes, buildings or channels will be only carried out if a sufficient ventilation and aeration can be granted at site. If this will be not the case, the shrinking works cannot be carried out.

10. Foaming works may not be carried out at air temperatures below + 5° C and at a relative humidity of more than 90 % as well as during rain. In case that this will be not possible, additional measurements, i. e. weather protection or pre-heating, has to be provided by the purchaser. The temperature of the system components, the PEHD-jacket-pipe and the carrier pipe should be at least + 15° C, however may not exceed + 45° C. As executing party of the insulation and sealing works, **isoplus** will have the right to stop or to postpone the post insulation works in case of unfavourable weather conditions.

11. The disposal of all waste resulting from the insulation and sealing works will be on charge of the pipe-layer. The **isoplus**-assemblers will pack the waste in waste-sacks and will deposit it at the agreed collection place. The disposal of PUR-waste will be made via a house-waste-garbage, according to the kind of waste catalogue of the German Environment Department, according to waste-key-number 57110 for hardened PUR-foam. The liquified Polyol- and Isocyanat-components have to be deposit at a special-waste-garbage according to the waste-key-number 57202.

12. During installation of the final components of the leak detection the pipe-layer has to assure that all buildings, manholes etc. will be accessible and not closed.

13. Additional works which will be not to **isoplus** charge, will be generally invoiced separately. This will include:

- ⇒ Additional approach and additional departure as well as overnight stay due to not sufficient information respectively not sufficient preparations.
- ⇒ Not considering of the **isoplus**-laying guidelines, especially concerning sufficient assembling space at the areas of the couplers, assembling fittings and expansion pads.
- ⇒ Cleaning works at the accessories and the welding spots, which are caused by not correct storage and not according to DIN prepared trenches.
- ⇒ Repairing of complaints at system components, caused by a third party.
- ⇒ Fees for waste disposal which has been charged to us.
- ⇒ Additional approaches to building site in case of less than eight couplers for post insulation.

14. The purchaser will be obliged to confirm the assembling reports after completion of the insulation and sealing works.

15. For all kind of documentation which will be required during assembling but which has been not agreed, respectively which was not included in the offer, **isoplus** will invoice according to the occurred additional extra works and the actual **isoplus**-rate per hour. This will be also valid for eventual required technical documents, like master drawings, static calculations, wiring drawings etc.