

To : **Teppfa National Association members**

Ref. : Teppfa Holding Statement

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Brussel, 31st January 2007

TEPPFA is committed to complying with European competition law.

Dear members,

Last year we were confronted with a distributed power point presentation from the Clay industry, attacking plastics piping systems.

This presentation was titled: Rigid or Flexible, Vitrified Clay or Plastic.

This presentation is available on Teppfa extranet Civils 06-13.

To assist our members in reacting in a uniform way, Teppfa Application Group Civils has prepared a reaction to the main topics that were stressed in this presentation and laid down in the attached Holding Statement.

AG Civils recommends all Teppfa members not to use it pro-actively but to use the argumentation of this holding statement only in those cases where the market or users are asking for it or challenging us.

Furthermore, the use of clay is very limited in several countries, but AG Civils considers that the information given in this Holding Statement can be used wherever similar attacks from traditional industries are popping up.

National associations are kindly asked to distribute this holding statement to all their members with the recommendation as above.

For all further information you can contact the Teppfa project manager (tmeijering@teppfa.org) or contact Teppfa secretariat.

Brussels, January 2007

On behalf of Application Group Civils:

Tiem Meijering
Teppfa project manager



Teppfa Holding Statement

A reaction on Clay presentation “Rigid or Flexible”

General

Teppfa members are producing and supplying piping systems for sewerage and drainage in conformity with the performance and quality levels as described in European product standards. A Quality Mark based on third party certification generally demonstrates and illustrates the continuity of this quality level, assuring that by good installation practices the performance of the sewer system is guaranteed.

The aim of this holding statement is to eliminate possible confusions on the issues which are recently highlighted by the Clay industry.

1. Lifetime

There is no reason to argue on lifetime of materials in use for sewerage and drainage. When properly installed, the physical and chemical stability of all plastics materials for piping systems show such a high level that all these materials can last much more than 100 years.

2. Diversity

The variety of products is the results of market demands. Plastics have the favorable opportunity to serve the market with different solutions. Most of the available plastics piping solutions are tailor made for different applications (e.g. sewer, road drainage, rain water etc.) with different sets of preferences and requirements, which are basically determined by the wishes and demands of the users.

All these piping systems have to fulfill the performance and quality requirements of the relevant EN standards which are generally decided by designers, prescribers, producers and users as being relevant for these particular applications.

The Clay industry is invited to show whether they also are able to meet these defined and relevant performance requirements.

- E.g.*
- Can Clay pipes withstand the same loadings as used by our Ring Flexibility Test at 30% deflection?
 - can Clay pipes withstand the defined Impact Test?

3. Hydraulics

All commercially available Plastics Piping systems are well documented regarding the real internal diameter and flow capacity.

The smooth surface of the inner wall of plastics pipes guarantees a better flow as for clay pipes. Studies have shown that until the practically expected maximum deflections of the pipes, no significant reduction in flow capacity will occur.



4. Strength and Stiffness

The material properties of plastics such as creep and stress relaxation and how they play a key role in the good performance of plastics pipes are not well understood.

In the Teppfa Buried Pipes project, it has been shown that the flexible behaviour of plastics pipes (from SN2 – 16) results in a pipe deflection that is mainly determined by the settlement of the ground during and after installation. Plastics Pipes simply follow the ground settlement, which is normally finished within 1 month to 2 years after installation depending of the soil compaction during installation. From that moment on, no further deflection or deformation in the pipes will occur. So creep does not take place and eventually present stresses relax down to a very low level.

Studies on excavated pipes after up to 40-50 years operation still show physical and mechanical properties of the same level as newly produced pipes of today. So during its life, the initial pipe quality does not change at all and the E modulus remains unchanged as well, which means that the resistance against external loadings remains the same during the whole lifetime of the pipes.

5. Installation and Static design

Static design calculations should demonstrate the ability of a pipe system to fulfill the required functioning. This means, operating without problems during the whole lifetime. In the recent Teppfa study (SMP), it has been demonstrated that rigid pipe systems show ~41 leaking failures per km and flexible pipes ~6 leaking failures per km. The evaluated effects on the environment are about 2 times higher for rigid pipes compared to flexible pipes.

As demonstrated in the Teppfa Buried Pipes project, it is mainly the quality of installation for both pipe systems, rigid and flexible, what determines the final performance during its lifetime. A design graph shows the predicted deflections after installation and after completed ground settlement.

6. Installation length

Because of the low weight per meter, Plastics Pipes can be used at greater lengths. These greater lengths up to 10-12 meters can also efficiently be used in the trench where the flexibility of the pipes can accommodate very well to the unavoidable unevenness of the trench bottom without causing problems.

Due to the rigidity of Clay pipes, pipe lengths (normally 2,5 meter) must be limited to avoid failure by installation due to unevenness of the bottom of the trench or uneven ground settlements afterwards.

Furthermore, the shorter the installed pipe lengths, the more joints must be used, which are a potential source of leakages and a higher risk for the environment.

So let the user count his benefits.



7. Temperature during installation and operations

Once properly installed in the ground, Plastics Sewerage and Drainage pipes show very minor thermal expansion due to the soil friction which will to quite an extent anchor the buried pipes. The jointing systems accommodate to the possible movements due to temperature variations. According to the relevant product standards, these joints are tested to fulfill the required temperature variations as defined in EN476.

8. Backfilling

A good backfilling of the trench is important for all types of pipes, rigid or flexible. For rigid pipes, poor backfilling can easily be followed by pipe failures in the ground settlement phase after installation, due to the incapability of rigid pipes to deform. Flexible pipes also need good backfilling to avoid point loading and to avoid excessive deflections during the ground settlement phase.

9. Acceptance guarantee

Sewer pipes fulfilling the performance requirements of the relevant EN standards, have been shown to be tight under deflections up to 15%. The Teppfa Buried Pipes study has shown that under normal good installation conditions, pipe deflections do not exceed 6-8% for the used stiffness classes. The measurement of the deflection of the installed sewer pipes is an efficient and cheap method to verify the quality of the installation, and has nothing to do with the quality of the pipe.

Contrarily, in case of Clay pipes, the effect of bad installation can not be detected so easily and is frequently only detected later on by occurring leakages, with the environment as the victim.

10. High pressure flushing

In a recent Teppfa study, it has been shown that medium water pressure levels and high water volumes is the most effective in cleaning sewers.

Teppfa considers it as irresponsible to advocate jetting pressures higher than are needed to flush or remove blockages. With a high percentage of rigid pipe sewers being in poor condition they are being put unnecessarily at risk by high pressure jetting.

11. Environment

When the environment is taken as an argument for materials, the total aspect must be taken into account. As mentioned before, in the SMP project it has been shown that rigid pipes in operation show leakages that effect the environment either by infiltration or exfiltration by 41 defects per kilometer where flexible pipes only show 6 per kilometer. The calculated relative effect on the environment is for rigid pipes two times higher than for flexible pipes.

(more info about CO2 can be found in the GUA study)



References

To support our argumentation against the Clay presentation, the following studies and documentation can be used. All information is available at Teppfa extranet or can be provided by Teppfa secretariat.

1. **Teppfa Buried Pipes project.** On request, the reports can be made available by Teppfa secretariat. New deliverables are under preparation and will be made available soon to support this issue. The Teppfa design graphs are recommended to use in practice and can still be made available by Teppfa.
2. **Jetting project.** Teppfa carried out investigations with clear recommendations which are published in a brochure. These are available on request.
3. **SMP project.** It is recommended to use the recently published summary of the final SMP report for promotional work. (Extranet Civils 07-02)
4. **GUA study.** This study presents a comprehensive overview of energy consumption by producing different products and materials, including pipes. This study is available at PlasticsEurope website, or can be made available by Teppfa secretariat.
5. **PVC lifetime reports.** Publications of KRV study (DE) and a recent TNO study (NL) support the message of expected lifetimes much higher than Clay industry is assuming.

Brussels
January 2007