

SONGSTAB™
Solid heat-stabilizer
solutions for rigid PVC
pipes and fittings

SONGWON is a leading specialist
in heat stabilizers for PVC.

To ensure homogenous gelation and fusion in PVC processing, SONGWON has developed a range of customized stabilizers that offer an excellent balance between heat stability and lubricant system.

The comprehensive range of SONGSTAB™ CaZn and tin one-pack stabilizers combines cost effectiveness with high performance and is tailor-made to customer requirements.

It's all about **the chemistry™**

 **SONGWON**

Songwon Industrial Co., Ltd.

SONGWON, which is headquartered in Ulsan, South Korea and operates group companies all over the world, has been developing, manufacturing and marketing a wide variety of additives and polymers for more than 55 years.

These include:

- Tin stabilizers (methyl, butyl and octyl + mercaptide and carboxylate)
- Liquid mixed metals BaCdZn, BaZn, CaZn, and kickers
- Solid CaZn stabilizers
- Co-stabilizers
- Plasticizers (DOA, TOTM and polymeric adipates)
- Lubricants and blends
- Antioxidants and UV absorbers
- Tin intermediates

Solid mixed-metal stabilizers for PVC pipes and fittings

In the past, heat stabilizers for PVC pipes and fittings in most countries outside of USA were mainly lead-based. As awareness of safety and health issues grows around the world, lead stabilizers are being banned completely in many countries and have been replaced by alternatives for various applications.

In line with the trend in Europe, Asia is now also rapidly replacing lead stabilizers. Processors can easily substitute lead with alternative stabilizers as no major changes need to be made to processing machinery; however, if switching to tin-mercaptide stabilizers, care should be taken to prevent sulfur staining.

SONGWON's portfolio comprises a variety of stabilizers for pipes and fittings with diverse characteristics such as initial color, long-term heat stability, lubricity, and gelation behavior.

SONGSTAB™ stabilizers generate significant value for PVC pipe producers

PVC pipes are produced by extrusion and in the past contained lead stabilizers. Numerous countries have now phased out lead or are in the process of replacing it by calcium-zinc or tin stabilizers.

There are no standard stabilizers for pipe application since these products are customized to suit various conditions, such as different extruder types, pipe specifications, die constructions and formulations, and to achieve the required rheological characteristics.

🌀 **SONGSTAB™ CZ-SP100** powerful core-solid calcium-zinc stabilizers, which promote outstanding heat stability, are designed for pipes with a diameter of 300 mm and more. To improve processability, the lubricant should be added separately.

🌀 **SONGSTAB™ CZ-SP600** one-pack solid calcium-zinc stabilizers for pipes up to 300 mm in diameter offer well-balanced heat stability and a lubricant system designed to ensure excellent gelation.

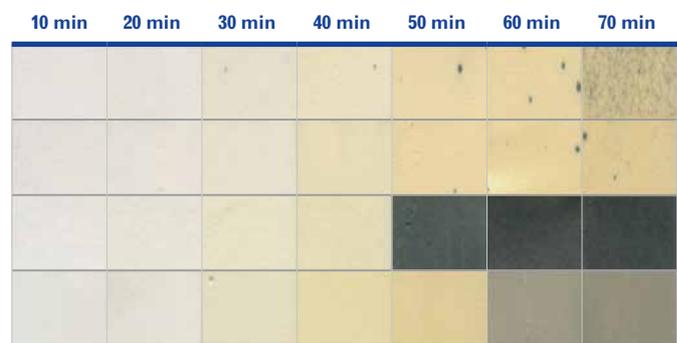
🌀 **SONGSTAB™ CZ-SP400** one-pack solid tin stabilizers offer outstanding heat stability and processability.

SONGSTAB™ solid mixed-metal stabilizers recommended for PVC pipe applications

| | | Formulation | | | | | | Two-roll mill condition | |
|-------------------------|--------------------|-----------------|------------------|-------------------------|--------------|-----------------------|----------------------------|-------------------------|-------------------|
| | | PVC resin [phr] | Stabilizer [phr] | CaCO ₃ [phr] | PE wax [phr] | Processing aids [phr] | TiO ₂ [R] [phr] | Roll temp. (°C) | Mixing time (min) |
| Core calcium-zinc | SONGSTAB™ CZ-SP180 | 100 | 2.5 | 5 | – | – | 1 | 195 | 3 |
| Core calcium-zinc | SONGSTAB™ CZ-SP180 | 100 | 2.5 | 5 | 0.5 | – | 1 | 195 | 3 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SP600 | 100 | 3 | 5 | – | – | 1 | 195 | 3 |
| One-pack tin-mercaptide | SONGSTAB™ CZ-SP400 | 100 | 3 | 5 | – | – | 1 | 195 | 3 |

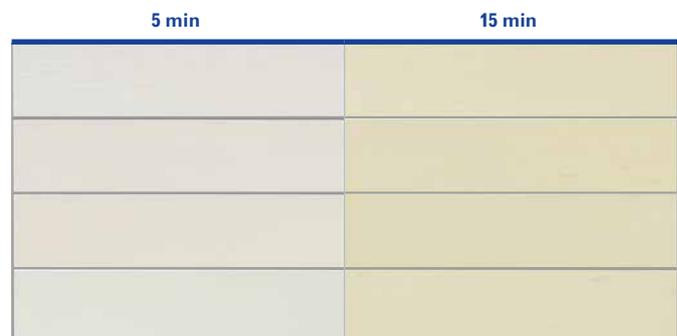
Static heat stability (195°C)

| | |
|-------------------------|-------------------------------------|
| Core calcium-zinc | SONGSTAB™ CZ-SP180 |
| Core calcium-zinc | SONGSTAB™ CZ-SP180 + 0.5 phr PE wax |
| One-pack calcium-zinc | SONGSTAB™ CZ-SP600 |
| One-pack tin-mercaptide | SONGSTAB™ CZ-SP400 |



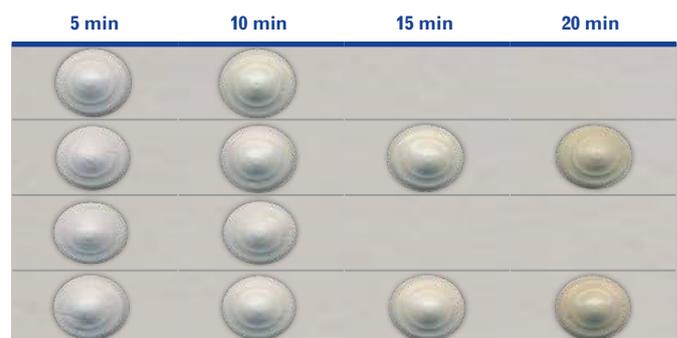
Press heat stability – 2 mm sheet (200°C)

| | |
|-------------------------|-------------------------------------|
| Core calcium-zinc | SONGSTAB™ CZ-SP180 |
| Core calcium-zinc | SONGSTAB™ CZ-SP180 + 0.5 phr PE wax |
| One-pack calcium-zinc | SONGSTAB™ CZ-SP600 |
| One-pack tin-mercaptide | SONGSTAB™ CZ-SP400 |



Dynamic heat stability (185°C)

| | |
|-------------------------|-------------------------------------|
| Core calcium-zinc | SONGSTAB™ CZ-SP180 |
| Core calcium-zinc | SONGSTAB™ CZ-SP180 + 0.5 phr PE wax |
| One-pack calcium-zinc | SONGSTAB™ CZ-SP600 |
| One-pack tin-mercaptide | SONGSTAB™ CZ-SP400 |



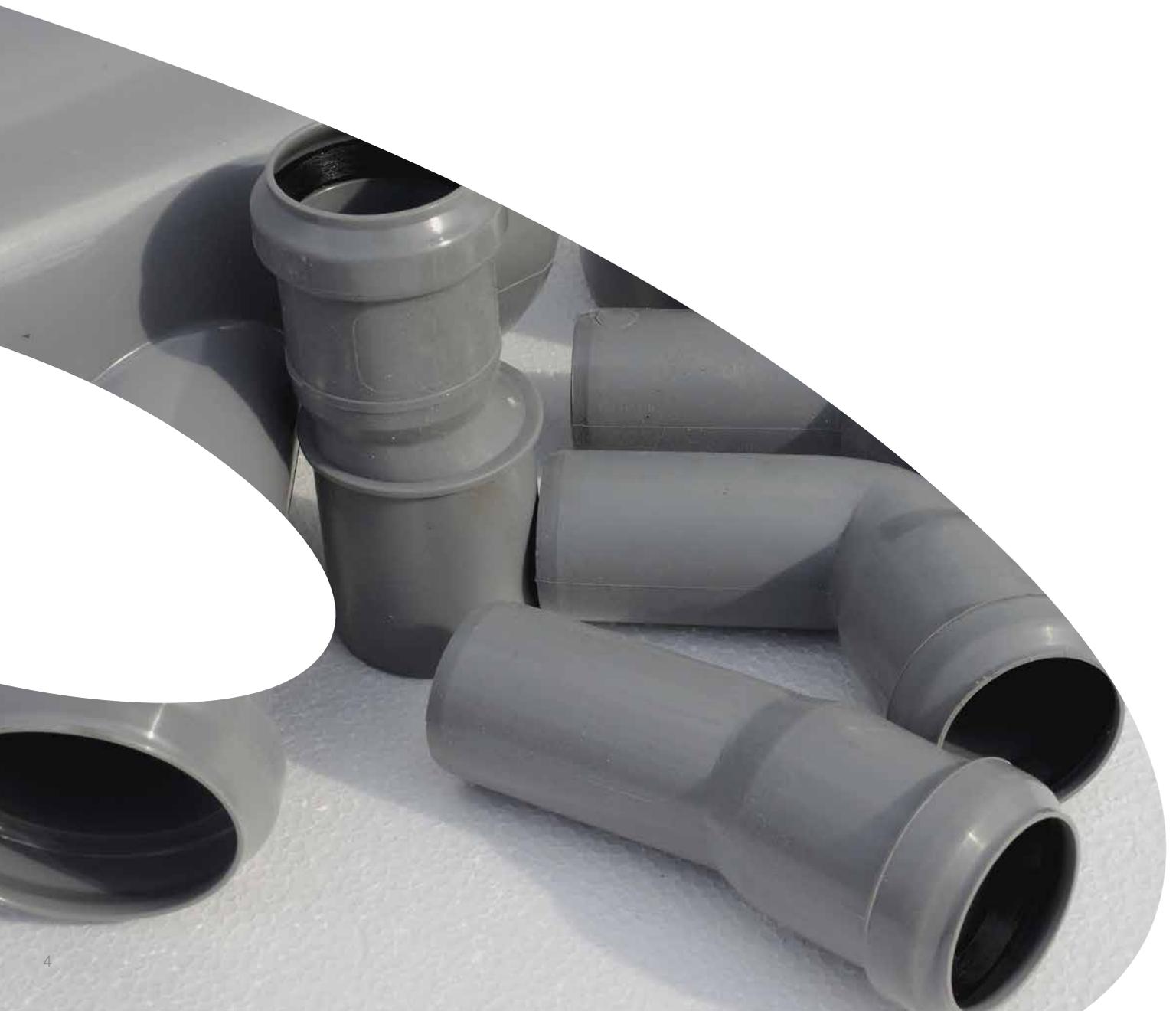
SONGSTAB™ stabilizers generate significant value for PVC fitting producers

Good processability and easy dosing are among the advantages of this solid CaZn range. In lower amounts, the products are also suitable for fittings with smaller diameters.

☞ SONGSTAB™ CZ-SF600 calcium-zinc stabilizers, which contain a tin booster, are designed especially for fittings with silver-streak surface issues.

☞ SONGSTAB™ CZ-SF400 is a well-balanced range of solid, one-pack tin stabilizers that improve the Vicat softening point.

☞ SONGSTAB™ CZ-SF300 solid one-pack calcium-zinc stabilizers offer good processability combined with high heat stability and lubricity.

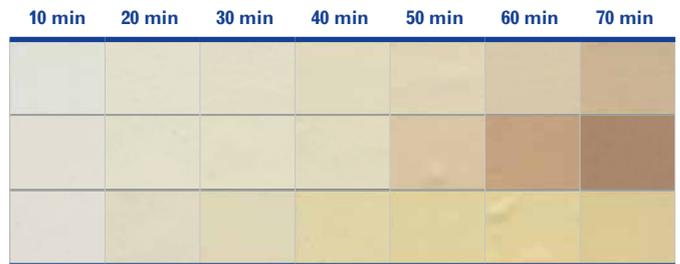


SONGSTAB™ solid mixed-metal stabilizers recommended for PVC fittings

| | | Formulation | | | | | Two-roll mill condition | |
|-----------------------------------|--------------------|-----------------|------------------|-------------------------|------------------|----------------------------|-------------------------|-------------------|
| | | PVC resin [phr] | Stabilizer [phr] | CaCO ₃ [phr] | Lubricants [phr] | TiO ₂ [R] [phr] | Roll temp. (°C) | Mixing time (min) |
| One-pack tin-boosted calcium-zinc | SONGSTAB™ CZ-SF600 | 100 | 3 | 5 | – | 1 | 190 | 3 |
| One-pack tin | SONGSTAB™ CZ-SF400 | 100 | 3 | 5 | – | 1 | 190 | 3 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SF300 | 100 | 3 | 5 | – | 1 | 190 | 3 |

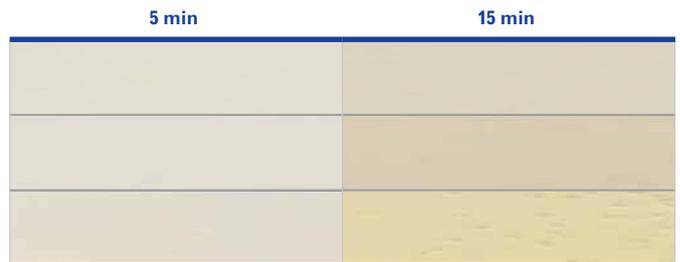
Static heat stability (185°C)

| | |
|-----------------------------------|--------------------|
| One-pack tin-boosted calcium-zinc | SONGSTAB™ CZ-SF600 |
| One-pack tin | SONGSTAB™ CZ-SF400 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SF300 |



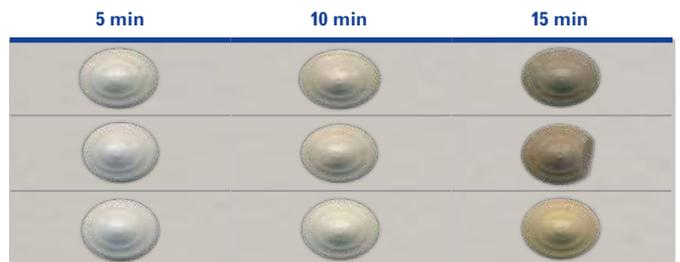
Press heat stability – 2 mm sheet (200°C)

| | |
|-----------------------------------|--------------------|
| One-pack tin-boosted calcium-zinc | SONGSTAB™ CZ-SF600 |
| One-pack tin | SONGSTAB™ CZ-SF400 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SF300 |



Dynamic heat stability (185°C)

| | |
|-----------------------------------|--------------------|
| One-pack tin-boosted calcium-zinc | SONGSTAB™ CZ-SF600 |
| One-pack tin | SONGSTAB™ CZ-SF400 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SF300 |

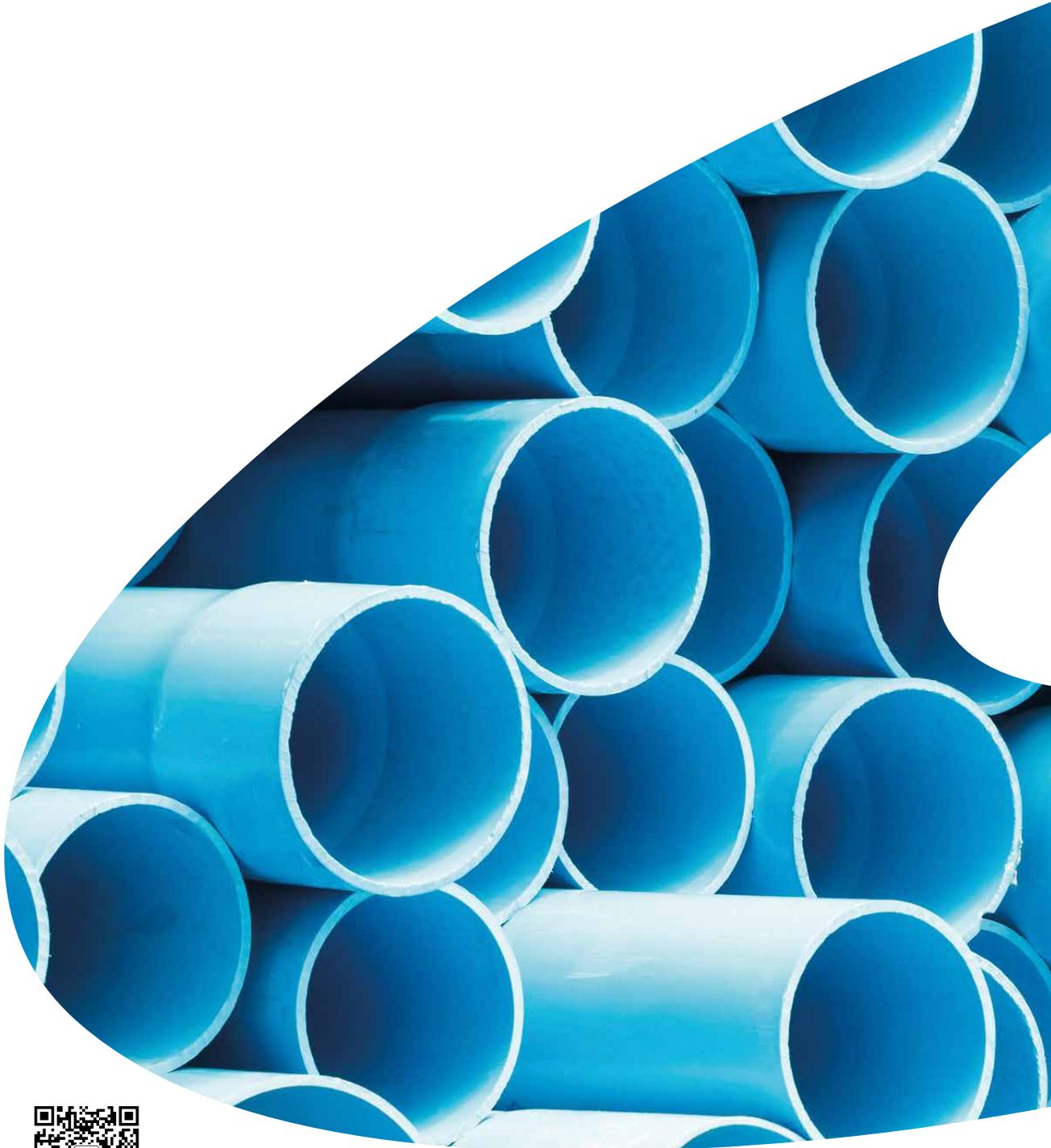


Vicat softening point

| | |
|-----------------------------------|--------------------|
| One-pack tin-boosted calcium-zinc | SONGSTAB™ CZ-SF600 |
| One-pack tin | SONGSTAB™ CZ-SF400 |
| One-pack calcium-zinc | SONGSTAB™ CZ-SF300 |

| Temperature [°C] |
|------------------|
| 76 – 78 |
| 78 – 80 |
| Above 80 |

SONGWON's portfolio comprises a variety of stabilizers for different end applications with diverse characteristics. Please contact our Technical Service and Development (TS&D) department for more details and advice on suitable products.



Check out our
official website



Check out our
WeChat account

For further information, please go to:

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SONGWON provides customers with warranties and representations as to the chemical or technical specifications, compositions and/or the suitability for use for any particular purpose exclusively in individual written agreements.

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