|  |  |  |
| --- | --- | --- |
| http://frunze.com.ua/wp-content/uploads/2021/02/log6.jpg | **“SMNPO- ENGINEERING” JSC** | Ukraine, 40009, Sumy,  58, Gorkogo Str.,  frunze.com.ua |
|  | Tel/fax +38 (0542) 777-829 | ***E-mail: sales@frunze.com.ua*** |

**Data Sheet**

**Ordering heat exchanger as per TU 3612-013-00220302-99**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | **Designation** | | |
| 2. | Design and operating conditions  Medium parameters | In tubes | In the shell |
| 2.1 | Pressure, MPa P op.  Р des. |  |  |
| 2.2 | Operating temperature, *0С* outlet  inlet |  |  |
| 2.3 | Design temperature, *0С* |  |  |
| 2.4 | The minimum allowable (negative) wall temperature of the vessel under pressure, 0С |  | |
| 2.5 | The average air temperature of the coldest five-day period of the installation area, 0С, (shall be filled in for vessels installed in an open area or in an unheated room) |  | |
| 2.6 | Working medium designation and percentage |  |  |
| 2.7 | Medium physical state (gas, steam, liquid) |  |  |
| 2.8 | Characteristics of the working medium:  - harmfulness in accordance with GOST 12.1.007 (indicating the hazard class)  - flammability according to GOST 12.1.004: "yes", "no"  - explosion hazard according to GOST 12.1.011 (indicating the category and mixture group) |  |  |
| 3. | The need to install parts for fastening the insulation "yes", "no" (cross out unnecessary) |  |  |
| 4. | The need to test base metal and welded joints for intergranular corrosion:  "yes", "no", if - yes, indicate the method according to GOST 6032\_\_\_\_\_\_\_\_\_\_  (shall be filled in for vessels in which steels of the following grades are used 08Х18Н10Т, 12Х18Н10Т, 10Х17Н13М2Т) | | |
| 5. | Specify: hinges “left”, “right”, “not required” (cross out unnecessary)  (shall be filled in only for vessels with the distribution chamber diameter of 600-1200 mm) | | |
| 6. | Heat exchangers are installed: "on a concrete base", "on a metal structure" (cross out unnecessary) | | |

The Data Sheet is not subject to approval.

Name of the consumer enterprise and process unit or line

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and postal address of the organization that filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the head of the organization who filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(position) (date) (signature)

|  |  |  |
| --- | --- | --- |
| http://frunze.com.ua/wp-content/uploads/2021/02/log6.jpg | **“SMNPO- ENGINEERING” JSC** | Ukraine, 40009, Sumy,  58, Gorkogo Str.,  frunze.com.ua |
|  | Tel/fax +38 (0542) 777-829 | ***E-mail: sales@frunze.com.ua*** |

**Data Sheet**

**Heat exchanger as per TU 3612-013-00220302-99 with design changes provided for by these specifications**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. | Standard vessel designation | | | | | |
| 2. | Design and operating conditions  Medium parameters | | | | In tubes | In the shell |
| 2.1 | Pressure, MPa P op.  Р des. | | | |  |  |
| 2.2 | Operating temperature, *0С* outlet  inlet | | | |  |  |
| 2.3 | Design temperature, *0С* | | | |  |  |
| 2.4 | The minimum allowable (negative) wall temperature of the vessel under pressure, 0С | | | |  | |
| 2.5 | The average air temperature of the coldest five-day period of the installation area, 0С, (shall be filled in for vessels installed in an open area or in an unheated room) | | | |  | |
| 2.6 | Working medium designation and percentage | | | |  |  |
| 2.7 | Medium physical state (gas, steam, liquid) | | | |  |  |
| 2.8 | Characteristics of the working medium:  - harmfulness in accordance with GOST 12.1.007 (indicating the hazard class)  - flammability according to GOST 12.1.004: "yes", "no"  - explosion hazard according to GOST 12.1.011 (indicating the category and mixture group)  - corrosion cracking: "yes", "no", if yes, then test | | | |  |  |
| 3. | The need to install parts for fastening the insulation "yes", "no" (cross out unnecessary) | | | |  |  |
| 4. | The need to test base metal and welded joints for intergranular corrosion:  "yes", "no", if - yes, indicate the method according to GOST 6032\_\_\_\_\_\_\_\_\_\_  (shall be filled in for vessels in which steels of the following grades are used 08Х18Н10Т, 12Х18Н10Т, 10Х17Н13М2Т) | | | | | |
| 5. | Specify: hinges “left”, “right”, “not required” (cross out unnecessary)  (shall be filled in only for vessels with the distribution chamber diameter of 600-1200 mm) | | | | | |
| 6. | Specify the type of pipe fastening in tube sheets: "expanding", "welding with expanding" (cross out unnecessary)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| 7. | Heat exchangers are installed: "on a concrete base", "on a metal structure" (cross out unnecessary) | | | | | |
| 8. | Nozzles | | Flanged taper designation | Note:  1. Nominal diameters are indicated if they are less than in these specifications.  2. If the flanged taper designation is not indicated, mating flanges shall be installed on nozzles. | | |
| Index | Nominal diameter |  |
|  |  |
| 9. | The content of the accepted differences from the prototype of the heat exchanger as per TU 3612-013-00220302-99 | | | | | |
| 10. | Accepted differences designation | | | | | |
| 11. | Order form for the heat exchanger as per TU 3612-013-00220302-99 with design changes provided for by these specifications is not subject to approval. | | | | | |

The Data Sheet is not subject to approval.

Name of the consumer enterprise and process unit or line

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and postal address of the organization that filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the head of the organization who filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(position) (date) (signature)

|  |  |  |
| --- | --- | --- |
| http://frunze.com.ua/wp-content/uploads/2021/02/log6.jpg | **“SMNPO- ENGINEERING” JSC** | Ukraine, 40009, Sumy,  58, Gorkogo Str.,  frunze.com.ua |
|  | Tel/fax +38 (0542) 777-829 | ***E-mail: sales@frunze.com.ua*** |

**Data Sheet**

**Manufacturing heat exchanger or tube bundle (when supplied independently) as per TU 3612-023-00220302-00**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Tube bundle designation | | |
| 2. | Design and operating conditions  Medium parameters | In tubes | In the shell |
| 2.1 | Pressure, MPa P op.  Р des. |  |  |
| 2.2 | Operating temperature, *0С* outlet  inlet |  |  |
| 2.3 | Design temperature, *0С* |  |  |
| 2.4 | The minimum allowable (negative) wall temperature of the vessel under pressure, 0С |  |  |
| 2.5 | The average air temperature of the coldest five-day period of the installation area, 0С, (shall be filled in for vessels installed in an open area or in an unheated room) |  |  |
| 2.6 | The boiling point of the working medium at a pressure of 907 MPa, 0С |  |  |
| 2.7 | Working medium designation and percentage |  |  |
| 2.8 | Medium physical state (gas, steam, liquid) |  |  |
| 2.9 | Characteristics of the working medium:  - harmfulness in accordance with GOST 12.1.007 (indicating the hazard class)  - flammability according to GOST 12.1.004: "yes", "no"  - explosion hazard according to GOST 12.1.011 (indicating the category and mixture group)  - corrosion cracking: "yes", "no", if yes, then test |  |  |
| 3. | Gaskets material |  |  |
| 4. | The need to install parts for fastening the insulation "yes", "no"  (cross out unnecessary) (parts are installed for vessels with a shell diameter ≥500 mm) | | |
| 5. | The need to test base metal and welded joints for intergranular corrosion:  "yes", "no", if - yes, indicate the method according to GOST 6032\_\_\_\_\_\_\_\_\_\_  (shall be filled in for vessels in which steels of the following grades are used 08Х18Н10Т, 12Х18Н10Т, 10Х17Н13М2Т, 08Х22Н6Т) | | |
| 6. | Specify: hinges “left”, “right”, “not required” (cross out unnecessary)  (hinges are installed on horizontal vessels with a diameter of 400-800 mm at Pnom≤6.3 MPa, with a diameter of 1400 mm at PN≤2.5 MPa) | | |
| 7. | Horizontal heat exchangers are installed: "on a concrete base", "on a metal structure" (cross out unnecessary) | | |
| 8. | Specify the type of pipe fastening in tube sheets: "expanding", "welding with expanding" (cross out unnecessary)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 9. | Seamless pipes "yes", "no" (cross out unnecessary) | | |
| 10. | Diagram of the vessel with the reference dimensions of nozzles and supports (given for the vessel in which there are differences from these specifications)   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Nozzles   |  |  |  |  | | --- | --- | --- | --- | | Nozzle No. As per the diagram | Nozzles service | Nozzles nominal diameter, mm | Nominal pressure, MPa | |  |  |  |  | |  |  |  |  | |  |  |  |  |   Note:  1. The vessel diagram shall be given in the form in which it is presented in these TU.   1. Dimensions shall be indicated if they differ from the dimensions given in these TU. 2. Nozzles nominal diameters shall be indicated if they are less than in these TU. | | |
| 11. | The content of the accepted differences from the prototype of the heat exchanger (differences listed in these technical specifications are allowed). | | |

The Data Sheet for heat exchanger manufacturing as per TU 3612-023-00220302-00 is not subject to approval.

Name of the consumer enterprise and process unit or line

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and postal address of the organization that filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the head of the organization who filled in the Data Sheet *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

(position) (signature) (name)

\_\_\_\_\_\_\_\_

(date)

|  |  |  |
| --- | --- | --- |
| http://frunze.com.ua/wp-content/uploads/2021/02/log6.jpg | **“SMNPO- ENGINEERING” JSC** | Ukraine, 40009, Sumy,  58, Gorkogo Str.,  frunze.com.ua |
|  | Tel/fax +38 (0542) 777-829 | ***E-mail: sales@frunze.com.ua*** |

**Data Sheet**

**Manufacturing heat exchanger as per TU 3612-024-00220302-02**

1. **Designation\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |
| --- | --- | --- | --- |
| **2.** | **Design and operating conditions**  **Medium parameters** | In tubes | In the shell |
| 2.1 | Pressure, MPa  Р op. |  |  |
| Р des. |  |  |
| 2.2 | Operating temperature, 0С |  |  |
| Inlet |  |  |
| Outlet |  |  |
| 2.3 | Shell and tubes walls temperature, 0С |  |  |
| 2.4 | Design temperature, 0С |  |  |
| 2.5 | The minimum allowable (negative) wall temperature of the vessel under pressure, 0С |  |  |
| 2.6 | The average air temperature of the coldest five-day period of the installation area, 0С, *(shall be filled in for vessels installed in an open area or in an unheated room)* |  |  |
| 2.7 | The boiling point of the working medium at a pressure of 0,07 МPа, 0С |  |  |
| 2.8 | Working medium designation and percentage |  |  |
| 2.9 | Medium physical state (gas, steam, liquid) |  |  |
| 2.10 | Characteristics of the working medium:  harmfulness in accordance with GOST 12.1.007 (*indicating the hazard class*) |  |  |
| flammability according to GOST 12.1.004: "yes", "no" |  |  |
| explosion hazard according to GOST 12.1.011 *(indicating the category and mixture group)* |  |  |
| corrosion cracking: "yes", "no", if yes, then test |  |  |
| **3.** | **Gaskets material** |  |  |

4. The need to install parts for fastening the insulation "yes", "no"

(cross out unnecessary) *(parts are installed for vessels with a shell diameter ≥500 mm)*

5. The need to test base metal and welded joints for intergranular corrosion:

"yes", "no", if - yes, indicate the method according to GOST 6032

*(shall be filled in for vessels in which steels of the following grades are used 08Х18Н10Т, 12Х18Н10Т, 10Х17Н13М2Т, 08Х22Н6Т)*

6.Specify: hinges “left”, “right”, “not required” (cross out unnecessary) *(hinges are installed on horizontal vessels with a diameter of 400-1200 mm at PN≤4 МPа, with a diameter of 1400 mm at PN≤2,5 МPа,*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

7. Horizontal heat exchangers are installed: "on a concrete base", "on a metal structure" (cross out unnecessary)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Specify the type of pipe fastening in tube sheets: "expanding", "welding with expanding" (cross out unnecessary)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Seamless pipes "yes", "no" (cross out unnecessary) *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

10. **Diagram of the vessel with the reference dimensions of nozzles and supports** (given for the vessel in which there are differences from these specifications)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Nozzles**

|  |  |  |  |
| --- | --- | --- | --- |
| Nozzle No. As per the diagram | Nozzles service | Nozzles nominal diameter, mm | Nominal pressure, MPa |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Note:

1. The vessel diagram shall be given in the form in which it is presented in these TU.
2. Dimensions shall be indicated if they differ from the dimensions given in these TU.
3. Nozzles nominal diameters shall be indicated if they are less than in these TU.

11.**The content of the accepted differences from the prototype of the heat exchanger** (differences listed in these technical specifications are allowed).

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

***Order form for the manufacture of a heat exchanger as per TU 3612-005-00220302-98 is not subject to approval.***

Name of the consumer enterprise and process unit or line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and postal address of the organization that filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Signature of the head of the organization who filled in the Data Sheet** *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*(position) (signature) (name)*

*\_\_\_\_\_\_\_\_\_\_\_\_\_*

*(date)*

|  |  |  |
| --- | --- | --- |
| http://frunze.com.ua/wp-content/uploads/2021/02/log6.jpg | **“SMNPO- ENGINEERING” JSC** | Ukraine, 40009, Sumy,  58, Gorkogo Str.,  frunze.com.ua |
|  | Tel/fax +38 (0542) 777-829 | ***E-mail: sales@frunze.com.ua*** |

**Data Sheet**

**Manufacturing evaporator as per TU 3612-005-00220802-98**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | 1. Designation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 2. | Design and operating conditions  Medium parameters | In tubes | In the shell |
| 2.1. | Pressure, MPa  Р op. |  |  |
| Р des. |  |  |
| 2.2. | Operating temperature, *0С*  inlet |  |  |
| outlet |  |  |
| 2.3. | Shell and tubes walls temperature, 0С  *(shall be filled in only for vessels of ИНТ, ИКТ type (ИНТ-* *thermosiphon evaporator with fixed tube sheets, ИКТ-* *thermosiphon evaporator with fixed tube sheets and a temperature compensator on the shell)* |  |  |
| 2.3. | Design temperature, 0С |  |  |
| 2.4. | The minimum allowable (negative) wall temperature of the vessel under pressure, 0С |  |  |
| 2.5. | The average air temperature of the coldest five-day period of the installation area, 0С, *(shall be filled in for vessels installed in an open area or in an unheated room)* |  |  |
| 2.6. | The boiling point of the working medium at a pressure of 0,07 МPа, 0С |  |  |
| 2.7. | Working medium designation and percentage |  |  |
| 2.8. | Medium physical state (gas, steam, liquid) |  |  |
| 2.9. | Characteristics of the working medium:  harmfulness in accordance with GOST 12.1.007 (*indicating the hazard class*) |  |  |
| flammability according to GOST 12.1.004: "yes", "no" |  |  |
| explosion hazard according to GOST 12.1.011 *(indicating the category and mixture group)* |  |  |
| corrosion cracking: "yes", "no", if yes, then test |  |  |
| 3. | Gaskets material |  |  |
| 4. | The need to install parts for fastening the insulation "yes", "no" *(ненужное зачеркнуть)*  *(parts are installed for vessels with a shell diameter >500 mm)* |  | |
| 5. | The need to test base metal and welded joints for intergranular corrosion:  "yes", "no", if - yes, indicate the method according to GOST 6032  *(shall be filled in for vessels in which steels of the following grades are used 08Х18Н10Т, 12Х18Н10Т, 10Х17Н13М2Т, 08Х22Н6Т)* |  | |
| 6. | Specify: hinges “left”, “right”, “not required” (cross out unnecessary)  (shall be filled in only for vessels with the distribution chamber diameter of 600-1200 mm) | | |

6. Specify: hinges “left”, “right”, “not required” (cross out unnecessary) (hinges are installed on horizontal vessels with a diameter of 600-800 mm at PN≤6,3 МPа, with a diameter of 1000-1200 mm at PN≤4,0 МPа,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Horizontal heat exchangers are installed: "on a concrete base", "on a metal structure" (cross out unnecessary)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Specify the type of pipe fastening in tube sheets: "expanding", "welding with expanding" (cross out unnecessary) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Seamless pipes "yes", "no" (cross out unnecessary) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Diagram of the vessel with the reference dimensions of nozzles and supports (given for the vessel in which there are differences from these specifications)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Nozzles**

|  |  |  |  |
| --- | --- | --- | --- |
| Nozzle No. As per the diagram | Nozzles service | Nozzles nominal diameter, mm | Nominal pressure, MPa |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Note:

1. The vessel diagram shall be given in the form in which it is presented in these TU.
2. Dimensions shall be indicated if they differ from the dimensions given in these TU.
3. Nozzles nominal diameters shall be indicated if they are less than in these TU.

11. **The content of the accepted differences from the prototype of the heat exchanger (differences listed in these technical specifications are allowed).**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Order form for the manufacture of a evaporator as per TU 3612-005-00220302-98 is not subject to approval.***

Name of the consumer enterprise and process unit or line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and postal address of the organization that filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the head of the organization who filled in the Data Sheet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(position) (signature) (name)

\_\_\_\_\_\_\_\_\_\_\_\_\_

(date)