



**ASME STANDARDS TECHNOLOGY, LLC  
Request For Proposal: RFP 16-01**

**Yield Strength Values Up To Maximum Temperature Design**

Solicitation Date: October 27, 2015  
Proposal Due Date: November 23, 2015

**1. Introduction**

ASME Standards Technology, LLC (“ASME ST-LLC”) is soliciting a proposal from interested respondents to determine yield strength ( $S_y$ ) values up to maximum temperature design.

This project results from a request by the ASME Pressure Technology Codes and Standards (“PTCS”) Standards Committee to identify, prioritize, and address technology gaps in PTCS Codes, Standards, and Guidelines, so as to maintain the technical relevance of ASME codes and standards products.

This request-for-proposal (“RFP”) and other open ASME ST-LLC RFPs are posted at the following ASME ST-LLC website: [http://stllc.asme.org/ST-LLC\\_RequestsProposals.html](http://stllc.asme.org/ST-LLC_RequestsProposals.html).

**2. Background**

Table Y-1 of ASME Section II Part D currently provides yield strength values up to 1000°F maximum, with some yield strength values at lower temperatures. The maximum design temperature in Tables 1A and 1B may be higher, therefore yield strength values need to be provided to ultimately complete Table Y-1 up to the maximum temperature design of Tables 1A-1B-5A and 5B for construction per ASME Section VIII Divisions 1 and 2.

**3. Scope of Work**

**a. Summary:**

In Division 1 the yield strength ( $S_y$ ) is used directly, or indirectly through the allowable primary and secondary stress limit ( $S_{PS} = \max [3S, 2S_y]$ ), in many of the design rules, such as:

- 1) UG-28 and UG-33 – External pressure: Calculation of allowable external pressure on cylinders and heads –  $S_y$  [see UG-28(c)(2) Step 3]
- 2) Part UHX – Shell-and-tube heat exchangers: Secondary stress limit in tube sheets, channels, shells, and expansion joints –  $S_{PS}$

- 3) Part UHX – Fixed tube sheet heat exchangers: Allowable tube buckling stress at design temperature –  $S_y$
- 4) Appendix 1-4 – Design of Head: Yield strength at design temperature –  $S_y$
- 5) Appendix 1-5 and 1-8 – Conical Reducers: Discontinuity stress limit and operating metal temperature –  $S_{PS}$
- 6) Appendix 5 – Flanged-and-Flued and Flanged-Only Expansion Joints: Thermally induced stress limit at operating metal temperature –  $S_{PS}$
- 7) Appendix 13 – Noncircular Vessels: Plate buckling stress at design temperature
- 8) Appendix 26 – Bellows Expansion Joints: Calculation of instability due to internal pressure at design temperature –  $S_y$
- 9) Nonmandatory Appendix A – Tube-to-Tube sheet Joint Loads: Calculation of tube joint interface pressure at the operating metal temperature –  $S_y$

Because Table Y-1 provides yield strength values up to 1000°F maximum, yield strength values up to the maximum temperature design are needed.

Due to the large amount of missing values, the materials investigated will be restricted to the list below, which correspond to the most commonly used materials for heat exchangers.

**Materials to be considered**  
(Temperatures are given for information only)

MAXIMUM TEMPERATURE (F) FOR TABLE Y-1 VALUES				
Material (UNS)	Material	Table 1A/1B Max Design Temp VIII-1	Table Y-1 Maximum Yield Temp	EP Chart Max Temp
S20910	XM-19	1200	1000	1200*
S30400	SS-304	1500	1000	1500*
S30403	SS-304L	1200	1000	800
S30908	SS-309S	1500	1000	1500*
S31008	SS-310S	1500	1000	1500*
S31600	SS-316	1500	1000	1500*
S31603	SS-316L	850	1000	800
S31635	SS-316Ti	1500	1000	1500*
S31700	SS-317	1500	1000	1500*
S31703	SS-317L	850	1000	800
S32100	SS-321	1500	1000	1500*
S34700	SS-347	1500	1000	1500*
S34800	SS-348	1500	1000	1500*

MAXIMUM TEMPERATURE (F) FOR TABLE Y-1 VALUES				
Material (UNS)	Material	Table 1A/1B Max Design Temp VIII-1	Table Y-1 Maximum Yield Temp	EP Chart Max Temp
C23000	CU 230	450	None	150*
C28000	CU 280	400	None	600*
C36500	CU 365	400	None	350*
C44300	CU 443	400	None	350*
C44400	CU 444	400	None	350*
C44500	CU 445	400	None	350*
C46400	CU 464	400	None	350*
C46500	CU-465	400	None	350*
C64200	CU 642	500	100	450*
C68700	CU 687	450	None	350*
C70400	CU 704	150	None	350*
C71000	CU 710	700	None	600*
N02201	NI 201	1200	1000	1000
N06002	NI X	1650	1000	1000
N06022	NI C22	1250	1000	1000
N06600	NI 600	1200	900	1200*
N06625	NI 625 SA	1600	1000	1500*
N06625	NI 625 Ann	1200	1000	1200*
N08330	NI 330	1650	1000	1200*
N08800	NI 800	1500	1000	1100*
N08810	NI 800H	1650	1000	1650*
N08811	NI 800HT	1650	None	1650*
N10003	NI N	1300	1000	1300*
N10276	NI C276	1250	1000	1000

**b. Deliverables:**

The Consultant shall provide the key project deliverables as follows:

1. Summary of data for evaluation gathered from literature and other sources
2. Draft evaluation for ferrous materials
3. Draft evaluation for non-ferrous materials
4. Draft Report
5. Final Report

The Consultant shall provide all written deliverables in the form of a Microsoft Word file that is formatted in accordance with the ASME ST-LLC Style Guide. One (1) peer review cycle of the Draft Report is anticipated, and the Consultant shall provide modifications to the Draft Report as a result of the aforementioned review cycle.

**c. Schedule:**

The Consultant shall submit a schedule with its proposal that provides major milestones, deliverables, and a reporting schedule. The Consultant shall complete the final deliverable no later than December 31, 2016.

**d. Status Reporting:**

The Consultant shall provide a brief status report on a monthly basis, via email, to the ASME ST-LLC project manager. The Consultant shall present progress reports at ASME BPV II and VIII committee meetings as requested.

**4. Applicant Eligibility Requirements**

ASME ST-LLC is seeking proposals from all qualified organizations including, but not limited to, engineering firms, independent consultants, academic institutions, and federally-funded research and development centers. In addition to relevant technical qualifications and experience, respondents must possess an understanding of relevant ASME codes and standards.

**5. Basis for Selection and Award**

ASME ST-LLC will select the winning Consultant by evaluating and comparing the merits of each respondent's complete proposal, based on the proposal's potential to achieve program objectives rather than solely on evaluated technical merit or cost. Evaluation criteria will include, but not be limited to, the following:

- Respondent's technical capabilities;
- Respondent's experience;
- Proposal Price;
- Project Schedule; and
- Respondent's Agreement with Terms and Conditions.

ASME ST-LLC reserves the right to award, in whole or in part, any, all, or none of the proposals submitted in response to this solicitation.

**6. Contract Terms and Conditions**

The Project contract shall be fixed-price, including labor and expenses. ASME's standard terms and conditions are located at the following URL: <http://files.asme.org/STLLC/13937.pdf>. The final contractual terms and conditions will be negotiated between ASME ST-LLC and the Consultant.

ASME ST-LLC will provide access to the required codes, standards, and other technical references applicable to the scope of work and the Project.

## **7. Submission Requirements**

### **a. Proposal Due Date:**

Proposals must be submitted by November 23, 2015. Respondents are encouraged to transmit proposals well before this deadline. Requests for an extension to this deadline must be sent by November 9, 2015 to the contact listed in Section 8 herein; ASME ST-LLC reserves the right to deny any and all such requests.

### **b. Anticipated Selection and Award Date:**

ASME ST-LLC intends to select the winning proposal within three weeks of the Proposal Due Date identified herein.

### **c. Proposal Preparation Costs:**

Proposal costs shall be borne by the respondent. This solicitation does not obligate ASME ST-LLC to pay any costs incurred in the preparation and submission of the respondent's proposal, in making necessary studies or designs for the preparation of the respondent's proposal, or to acquire or contract for any services.

### **d. Proposal Clarification:**

ASME ST-LLC reserves the right to request clarification of a proposal or to request supplemental information or both. An award for the scope of work may be made after few or no exchanges, discussions, or negotiations; therefore, all respondents are advised to submit its most favorable proposal to ASME ST-LLC initially. ASME ST-LLC reserves the right, without qualification, to reject any or all proposals received in response to this solicitation and to select any proposal, in whole or in part, as a basis for negotiation, or award, or both. ASME ST-LLC reserves the right to modify or cancel this solicitation at any time. All questions relating to this solicitation must be submitted to the contact listed in Section 8 herein. Any amendments to this solicitation will be posted on the ASME ST-LLC website ([stllc.asme.org](http://stllc.asme.org)).

### **e. Treatment of Proprietary Information:**

A proposal may include technical or other data, including trade secrets or privileged and confidential commercial or financial information, which the respondent does not want disclosed to the public or used by ASME ST-LLC for any purpose other than proposal evaluation. To protect such data, the respondent should specifically identify such data or information to be protected.

### **f. Proposal Preparation and Submittal Instructions:**

ASME ST-LLC may form a committee of subject matter experts to evaluate the technical qualifications of respondents. To help facilitate this evaluation, responses should be separated into two separate documents: a Technical Proposal; and a Financial Proposal.

- **Technical Proposal shall include:**

1. Organization name and contact information.
2. Evidence of technical capabilities, including credentials, qualifications, capabilities, and experience of individuals and the organization.
3. Description of the approach to accomplish the Scope of Work.
4. Demonstration of the agreement with the Scope of Work.

- **Financial Proposal shall include:**

1. A fixed-price for the entire scope of work, including applicable hourly billing rates.
2. An agreement with ASME's standard Terms and Conditions, or state any requested exceptions.

The respondent must submit its Technical Proposal and Financial Proposal electronically via e-mail to the ASME ST-LLC contact below. Responses must be received on or before the Proposal Due Date identified herein.

## **8. Contact Information**

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