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No. 102, Zagros Blvd, Zagros Industrial Town, Kerman  
 Khodro Blvd, Lashkari Expy, Tehran, Iran.  
 Tel.: +982166935437, +982166935745  
 Email: info@irrup.com

<b>RUPTURE DISK DEVICE SPECIFICATION SHEET</b>		Sheet No. _____ Page of _____	
		Requisition No. _____	
		Job No. _____	
		Date _____	
		Revised By _____	
<b>General</b>			
1.	Item Number	3.	Service, Line, or Equip. No.
2.	Tag Number	4.	Design Code or Standard
<b>Service Conditions (include applicable units)</b>			
5.	Vessel or Piping MAWP		
6.	Fluid		
7.	Fluid State (initiating rupture)		
8.	Fluid State (relieving conditions)		
9.	Required Relieving Capacity		
10.	Molecular Weight or Specific Gravity		
11.	Viscosity at Relieving Temperature		
12.	Compressibility Factor (Z)		
13.	Specific Heat Ratio		
14.	Normal Maximum Operating Pressure		
15.	Normal Maximum Operating Temperature		
16.	Pressure Fluctuations (static, cyclic, pulsating)		
17.	Superimposed Back Pressure		
18.	Built-up Back Pressure		
19.	Back Pressure		
20.	Inlet Vacuum Conditions		
21.	Outlet Vacuum Conditions		
22.	Disk Located Upstream of Valve (yes/no)		
23.	Disk Located Downstream of Valve (yes/no)		
24.	Nonfragmenting Design (yes/no)		
<b>Connections</b>			
25.	Nominal Pipe Size	27.	Flange Face (inlet/outlet)
26.	Flange Standard & Class	28.	Piping Schedule or Bore
<b>Rupture Disk Holder</b>		<b>Rupture Disk</b>	
29.	Holder Tag No.	41.	Nominal Disk Size
30.	Nominal Holder Size	42.	Disk Type
31.	Design Type	43.	Model Designator
32.	Model Designator	44.	Quantity Required
33.	Quantity Required	45.	Manufacturing Range
34.	Holder Material (inlet)	46.	Specified Burst Temperature
35.	Holder Material (outlet)	47.	Specified Burst Pressure
36.	Gauge Tap (y/n) & Size	48.	Max Marked Burst Pressure
<b>Accessories</b>		49.	Min Marked Burst Pressure
37.	Studs & Nuts (y/n) & Matl	50.	Operating Ratio
38.	Jackscrews (yes/no)	51.	Max Flow Resistance $K_R$
39.	Telltale Assy (y/n) & Matl	52.	Rupture Disk Materials
40.	Other		
		53.	Manufacturer's Data



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## ***A line-by-line description of Rupture Disk Device Specification Sheet According to API-520***

- 1. Item Number:** Sequential number from requisition.
- 2. Tag Number:** Number assigned to rupture disk which identifies rupture disk location.
- 3. Service, Line, or Equipment No.:** Number identifying the service, line, or equipment in which the rupture disk is installed.
- 4. Applicable Codes or Standards:** Specify applicable codes or standards (e.g. ASME, API, ISO, etc.) for sizing, marking, burst tolerance, testing, etc.
- 5. Vessel or Piping Maximum Allowable Working Pressure:** This pressure is defined in the ASME Code and is specified by the user for the vessel or piping to be protected. This pressure may also be used to evaluate proper sizing and marking.
- 6. Fluid:** The process media is used by the user to define compatible materials for rupture disks and holders.
- 7. Fluid State (initiating rupture):** Gas (vapor) or liquid. Some disks are designed to burst with vapor only. The user should consult the rupture disk manufacturer for information about liquid service applications.
- 8. Fluid State (relieving condition):** Gas (vapor), liquid, or multiphase flow. Users need this information to calculate flow rates and size the rupture disk device.
- 9. Required Relieving Capacity:** User to document the required relieving capacity and units for the disk specified. See sizing of rupture disk devices in API520.
- 10. Molecular Weight or Specific Gravity:** (at relieving temperature) Needed to size relieving system components.
- 11. Viscosity:** (at relieving temperature) Needed to size relieving system components if viscous fluid. User to specify units.
- 12. Compressibility Factor (Z):** This factor is used as a constant in disk sizing using the coefficient of discharge method.
- 13. Specific Heat Ratio:** This constant is used in disk sizing calculations.
- 14. Normal Maximum Operating Pressure:** The maximum pressure at which the system normally operates. This pressure is used to calculate the operating ratio.



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**15. Normal Maximum Operating Temperature:** The maximum temperature at which the system normally operates. This temperature is used to evaluate disk type, material, and performance.

**16. Pressure Fluctuations (static, cyclic, pulsating):** Specify cyclic or pulsating service when applicable. Cycling service is considered as a large amplitude and low frequency. Cyclic service with vacuum cycles must be indicated. Pulsating service is considered as small amplitude and high frequency. For certain types of rupture disks, the operating ratio affects the service life in cyclic applications.

**17. Superimposed Back Pressure:** See 1.2.3.3k for definition. A rupture disk is a differential pressure device; therefore, this pressure needs to be considered when specifying burst pressure. Additionally, superimposed backpressure is used to determine disk type and construction. (e.g. vacuum/backpressure supports). For disks vented to atmosphere, the superimposed back pressure is atmospheric pressure and it is constant. See 2.3.6.1 for a discussion on the effects of superimposed back pressure on rupture disk selection.

**18. Built-up Back Pressure:** See 1.2.3.3j for definition. This pressure is used to determine system back pressure.

**19. Back Pressure:** See 1.2.3.3i for definition.

**20. Inlet Vacuum Conditions:** Inlet vacuum conditions are used to determine rupture disk type and construction (e.g., vacuum supports). Select and document vacuum units carefully, absolute units have positive values and gage units have negative values.

**21. Outlet Vacuum Conditions:** A rupture disk is a differential pressure device, therefore, outlet vacuum needs to be considered when specifying the burst pressure.

**22. Disk Located Upstream of Pressure Relief Valve (yes/no):** This information is needed to verify proper selection (e.g., 3% rule) of non-fragmenting disks.

**23. Disk Located Downstream of Pressure Relief Valve (yes/no):** This information is needed by the user to verify installation and sizing requirements for this application.

**24. Non-fragmenting Disk (yes/no):** See 1.2.1.4c for definition. User must specify non-fragmenting requirement to the manufacturer.

**25. Nominal Pipe Size:** This information is used to identify the nominal size of the mating



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fittings.

**26. Applicable Flange Standard & Class:** This information is used to identify pressure ratings and dimensions of holders.

**27. Flange Facing (inlet/outlet):** Used to identify the mating flange facing, e.g., RF, FF.

**28. Piping Connection (schedule/bore):** This information is used to evaluate flow area and proper selection of holderless disks.

**29. Holder Tag No.:** Number assigned to rupture disk holder which identifies holder location.

**30. Nominal Holder Size:** Specify nominal holder size. In some cases, nominal holder size may be larger than the relief piping to obtain lower burst pressures.

**31. Design Type:** Specify holder type, such as insert or full bolting. Holder selection may be based on ease of installation and maintenance or mating connections. Full bolting holders may reduce the heat flow to flange studs in a fire.

**32. Model Designator:** When known, specify the applicable manufacturer's model number, name, or designator.

**33. Quantity Required:** Specify quantity of holders required. Preventive maintenance and spares should be considered.

**34. Holder Material & Coatings (inlet):** User should select an inlet material compatible with process fluids. Coatings and linings are sometimes used to enhance corrosion resistance or reduce product buildup.

**35. Holder Material & Coatings (outlet):** Outlet holder material may be different from inlet holder material and should be selected based on frequency and duration of exposure to process and downstream fluids.

**36. Gauge Tap (yes/no) and Size (NPT) (outlet):** Gauge taps in holder outlets are primarily used to vent and/or monitor the cavity between a rupture disk and a downstream pressure relief valve. See 2.3.2.2.

**37. Studs and Nuts (yes/no) and Material:** Specify if studs and nuts are to be supplied with the rupture disc holder and if so what materials (e.g. alloy or stainless steel).

**38. Jackscrews (yes/no):** Indicate if jackscrews are required. Jackscrews are used to separate mating flanges to facilitate installation and maintenance of holders.



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**39. *Telltale Assembly (yes/no) and Material:*** Telltale assemblies typically consist of a pressure gauge, excess flow valve, and connecting fittings. These assemblies are installed in holder outlets that are located upstream of pressure relief valves. These devices provide venting and monitoring of the cavity between the disk and valve as specified in 2.3.2.2. If other monitoring devices are required, indicate here.

**40. *Other:*** Space provided for specifying other accessories.

**41. *Nominal Disk Size:*** Specify nominal disk size. In some cases, the nominal disk size may be larger than the relief piping to obtain lower burst pressures.

**42. *Disk Type:*** Identify preference, if any, for forward-acting, reverse-acting, or graphite. Line No. Instruction

**43. *Model Designator:*** When known, specify the applicable manufacturer's model number, name, or designator.

**44. *Quantity Required:*** Specify quantity of disks required. Startup, preventive maintenance, and spares should be considered.

**45. *Manufacturing Range:*** User to specify the desired manufacturing range. The manufacturing range must always be evaluated before the specified burst pressure is determined to ensure that the marked burst pressure will be within applicable ASME Code pressure limits. Manufacturing ranges generally depend on (a) the specified burst pressure level, (b) the rupture disk design type, and (c) the rupture disk manufacturer. Manufacturing ranges are expressed as (a) plus or minus a percentage of the specified pressure, (b) plus or minus pressure units, or (c) zero percent or no manufacturing range. See 1.2.3.3h for definition.

**46. *Specified Burst Temperature:*** User to specify the temperature at which the disk is to be rated and marked.

**47. *Specified Burst Pressure:*** A pressure specified by the user taking into consideration manufacturing range, burst tolerance, superimposed back pressure and operating pressure.

**48. *Maximum Marked Burst Pressure:*** This pressure is calculated by adding the positive manufacturing range to the specified burst pressure. The maximum marked burst pressure is then verified to meet the vessel or piping protection requirements for single, multiple, fire, or



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redundant applications.

**49. Minimum Marked Burst Pressure:** This pressure is calculated by subtracting the negative manufacturing range from the specified burst pressure. The minimum marked burst pressure is used to calculate the operating ratio.

**50. Operating Ratio:** See 1.2.3.3q for definition. The operating ratio is used to evaluate the proper selection of the rupture disk and is calculated as follows: (a) For marked pressures above 40 psig the operating ratio is equal to the maximum normal operating pressure divided by the minimum marked burst pressure, (b) For marked pressures 40 psig and below, the operating ratio is equal to the maximum normal operating pressure divided by the minimum marked burst pressure, less 2 psig.

**51. Maximum Flow Resistance Factor ( $k$ ):** When using the total flow resistance method to size relief piping components, specify the maximum flow resistance factor required for the rupture disk. The maximum flow resistance factor is expressed as a velocity head loss.

**52. Rupture Disk Materials:** The user is responsible for selecting and specifying rupture disk materials that are compatible with system fluids. Verify the selected materials are available for the rupture disk type, pressure, and temperature specified above.

**53. Manufacturer's Data:** When available specify the manufacturer's name and lot number. If the rupture disk has been previously ordered, the manufacturer will have lot number traceability to the previous order rupture disk specifications.



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